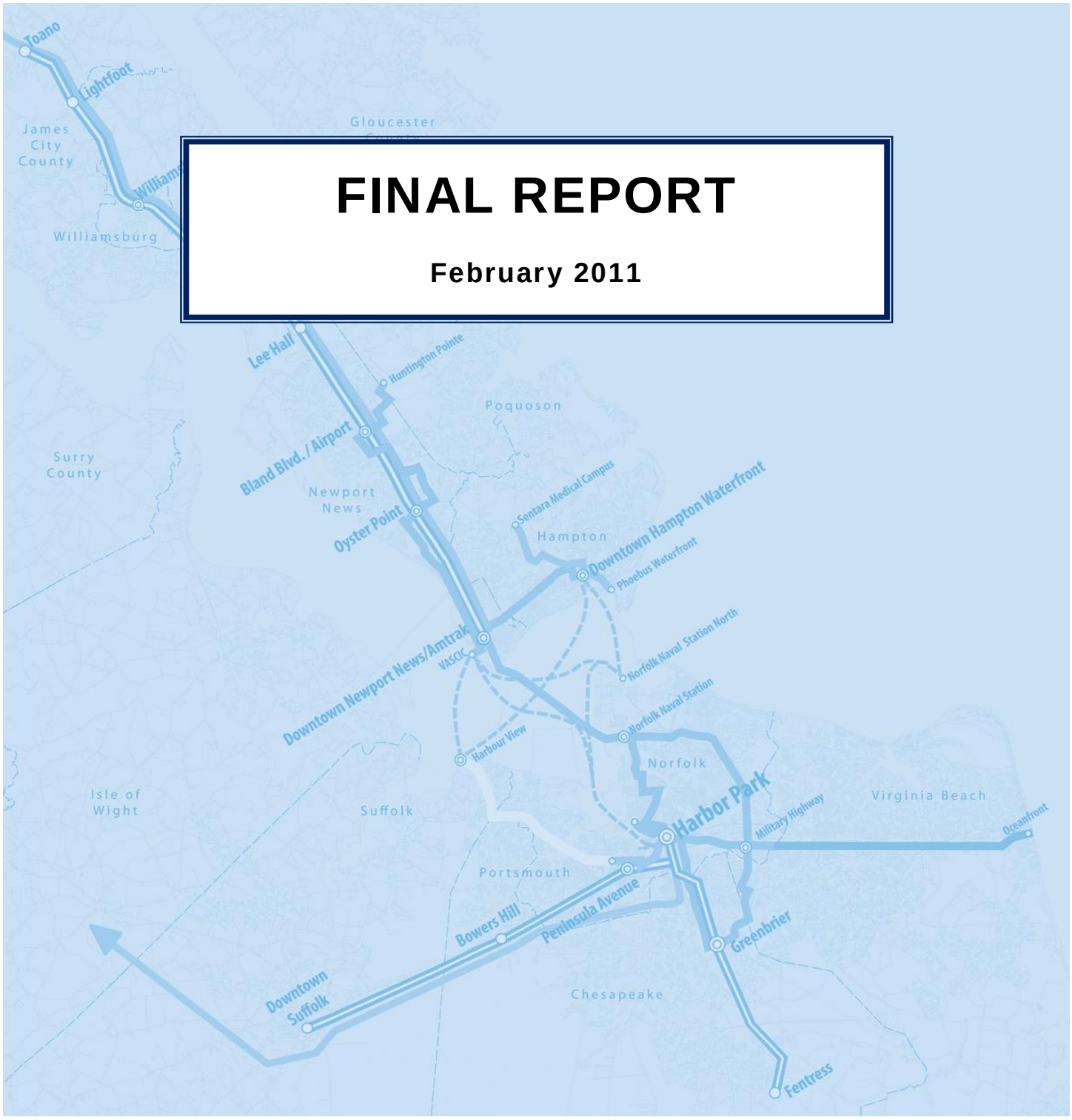
Hampton Roads Regional Transit Vision Plan



FINAL REPORT

February 2011

HRT Hampton Roads Transit

Williamsburg Area Transit Authority

DRPT Virginia Department of Rail and Public Transportation

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1.0 Background

The Hampton Roads Regional Transit Vision Plan (HRRTVP or the "Vision Plan") looks into the future – 2025 and beyond – to visualize what may be possible for the region's transit services. It provides a concept for a regional rapid transit network that connects major employment and population centers in Hampton Roads. It envisions thoughtful and coordinated land use planning combined with specific transit modes that improve mobility options for the public. The purpose of HRRTVP is to provide a long-term framework for transit development, not a definite set of approved projects. As the region selects projects for further study, planners, elected officials, and the public will collaborate to define the specific requirements, alignments and transit modes in accordance with local land use planning, alternatives analysis, environmental considerations and available funding.

1.1 Vision Plan Purpose and Goals

The Hampton Roads economy and population will continue to grow. This growth will generate increased demand on one of the region's most important assets – its transportation infrastructure. Regional leaders recognize that a long-term solution cannot be achieved through roadway improvements alone. A comprehensive transit system could improve both quality of life and regional economic performance. The region's vision[1] for transit is articulated as follows:

> An integrated public transit network will provide Hampton Roads with transportation choices, thereby ensuring greater mobility, economic development, environmental protection, energy independence, and quality of life.

Based on this vision, the following specific goals guided the analyses and recommendations of the HRRTVP:

1. Maximize limited infrastructure budgets through parity between transit and highway investments.
2. Provide greater mobility options through an integrated high-capacity transit system.
3. Improve land use and transportation coordination by encouraging transit-supportive development within mixed-use activity centers and corridors.
4. Reduce energy consumption, improve air quality, and mitigate climate change impacts with a robust transit system based on renewable energy sources.
5. Promote economic growth and regional competitiveness through a transit system that connects major activity and employment centers.

1.2 Vision Plan Components

The final report summarizes the analyses and recommendations of Phase 2 of the HRRTVP, conducted by the Virginia Department of Rail and Public Transportation (DRPT) in partnership with Hampton Roads Transit (HRT) and Williamsburg Area Transit Authority (WATA). It builds on and refines the initial Phase 1 study conducted by the Hampton Roads Transportation Planning Organization (HRTPO) and Hampton Roads Partnership. Phase 1 was launched in mid-2008 and concluded in April 2009. Phase 2 evaluated the transit corridors identified in the April 2009 Phase 1 *Vision Plan Document* and placed a greater emphasis on the link with local government land use planning while refining the methodologies for ridership forecasts and capital cost estimates. Site visits and interviews with local government planners were key components of Phase 2. A steering committee with representatives from the region's local government and regional planning organizations provided guidance throughout the process. Based on the additional information, the Phase 2 study made refinements to corridor

[1] The vision statement and goals were drafted during the initial Phase 1 study based on input by the public, the project review committee and regional planning agencies.

routes, modes and phasing recommendations. Additional technical analyses and local government and stakeholder input provided further information on which to evaluate the refined corridors and produce a final set of recommendations.

The plan considered the following transit modes:

Light Rail Transit (LRT) – an electric railway powered by overhead wires. The TIDE, currently under construction in Norfolk, is an example of LRT. Trips are from 5 – 20 miles in length. LRT can operate along dedicated right-of-way corridors and along some urban streets.

Commuter Rail – heavy rail equipment largely operating on existing rail corridors and consisting of diesel locomotives pulling multiple rail coaches. Trips are from 20 – 60 miles in length, much like the Virginia Railway Express (VRE) in Northern Virginia.

Enhanced Bus – higher-frequency service with improved operations such as priority at traffic signals, real-time arrival information, and additional station stop amenities. Vehicles are generally standard-size local buses but may be longer articulated local buses depending on corridor passenger demand.

Express Bus – similar to today's HRT MAX service that uses coach bus vehicles and serves regional commuter trips. Express buses use high-occupancy vehicle (HOV) lanes when available.

Bus Rapid Transit (BRT) – special bus service operating in dedicated lanes with station and vehicle improvements to speed boarding. Serves intermediate distance trips with limited stops.

High-Speed Ferry – passenger ferries (no vehicles on board) geared toward commuters. Routes would connect key employment centers on either side of the Hampton Roads Harbor and Elizabeth River.

Land use planning is a critical component of the Vision Plan, which seeks to establish a regional transit network supported by transit-oriented development (TOD) and connecting major employment and population centers in

Hampton Roads. TOD supports efficient transit service through the creation of compact, walkable, mixed-use communities within ¼ to ½ mile of a transit station. Examples of existing Hampton Roads development, both recent and older, with transit-supportive characteristics are shown in the photos below.

Port Warwick, Newport News
(Source: Rosalind Boyle, VirtualTidewater)

Ghent neighborhood, Norfolk
(Source: kroo2u, Flickr)

2.0 Technical Analyses and Stakeholder Outreach

The study process that resulted from the goals outlined in Section 1.1 is described below.

2.1 Study Process

The Vision Plan is the result of two study phases, an initial phase that examined a wide range of corridors at a broad level and a second phase that conducted more detailed land use and other technical analyses and refined the recommendations.

2.1.1 Phase 1

The process to develop the Phase 1 plan was initiated by the Hampton Roads Partnership, a non-profit public/private organization dedicated to enhancing the competitiveness of the Hampton Roads region. Joining with the HRTPO and DRPT, a study was launched in mid-2008 and concluded in April 2009.

The Phase 1 process elaborated the transit vision statement and goals included above and assembled a technical committee of representatives of the 13 local government jurisdictions and regional and state organizations, including HRTPO, DRPT, HRT, and the Hampton Roads Partnership. The committee provided direction and feedback on the Phase 1 analyses and recommendations.

The general process for developing the Phase 1 recommendations was as follows:

- Identification of transit-supportive areas of the region using demographic data for existing and future conditions in Hampton Roads, from 2000 to 2034;
- Analysis of local government comprehensive plans to identify planned activity centers;
- Mapping regional activity centers based on the comprehensive plans and demographic projections;
- Developing a network of corridors to connect the activity centers;
- Performing broad-level analyses and soliciting feedback from the plan Technical Committee regarding the feasibility of the corridors in the initial network; and
- Prioritizing the implementation of the corridors based on qualitative measures of project readiness, effectiveness, service efficiency, and land use supportiveness.

The Phase 1 recommendations included the following components:

- **Regional transit corridors** – the plan proposed an initial network of rapid transit, commuter rail, ferry and express bus corridors to connect activity centers throughout the region.
- **Areas underserved by transit** – the study identified areas, especially those with transit-dependent populations, where existing transit services were limited.
- **Travel Demand Management** – the plan included broad strategies to facilitate transit and carpool usage such as expanded employer transit benefits, park-and-ride facilities, HOV lanes, and other measures commonly used in major U.S. metropolitan areas.
- **Funding considerations** – existing federal and state transit funding programs were outlined and other local options explored.

2.1.2 Phase 2

To refine the initial network of recommendations produced in Phase 1, a more detailed series of analyses were conducted beginning in November 2009. Phase 2 evaluated the proposed transit corridors contained in the April 2009 *Vision Plan Document* and placed a greater emphasis on the link with local government land use planning. Site visits and interviews with local government planners were key components of Phase 2. Based on the additional information, refinements in corridor routes, mode and phasing were made, and some new corridors were identified for further study. Additional technical analyses and local government and stakeholder input provided further information on which to evaluate the refined corridors and produce a final set of recommendations.

The components of the Phase 2 study comprised the following:

Expanded Local Stakeholder Outreach

- Created a project Steering Committee with representatives of local governments, regional planning agencies, the Navy, the Virginia Department of Transportation (VDOT) and the Hampton Roads Partnership;
- Conducted interviews with staff of all local government jurisdictions in the region, including planners and economic development officials; and
- Made site visits with local government staff to proposed transit corridors to document existing conditions and understand the local vision for these areas.

Land Use Analysis

- Re-evaluated and documented current land use patterns in the transit corridors and proposed new corridors; and
- Analyzed compatibility between proposed transit improvements and land use expectations as contained in local comprehensive plans and zoning regulations.

Market and Economic Analysis

- Developed demographic and economic baselines;
- Determined development potential, in cooperation with the land use analysis;
- Interviewed local government economic development professionals; and
- Developed projections for transit corridors and assessed transit investment impacts on net new development to the region, employment, construction earnings, and tax revenue.

Capital Cost Estimates

- Developed refined methodology and capital cost ranges.

Ridership Forecasting

- Developed refined methodology and revised ridership forecast ranges.

Marketing Framework Plan

- Developed key messages and strategic approaches to support the plan;
- Identified innovative and effective marketing strategies, to include radio, TV, social networking, and public service ads; and
- Prepared a sample 24-month promotional and marketing campaign schedule with estimated budget[2].

Overall Evaluation of Transit Corridors

- Used findings of above analyses to develop evaluation criteria;
- Assessed contribution of corridors to the regional transit network and multi-modal connectivity (e.g., links to future high-speed rail stations, airports and established pedestrian grids); and
- Recommended timeframes for implementation of transit corridors based on current and projected corridor feasibility.

Table ES-1 lists the evaluation criteria that were used to assess the overall performance and implementation feasibility of the proposed corridors. These criteria were also used to make recommendations on implementation phasing.

Table ES-1: Corridor Evaluation Criteria

Corridor Characteristics	Evaluation Criteria
Land Use Planning to Support TOD	• Comprehensive and small area planning vision for TOD • Zoning to implement TOD • Connection(s) to major employment centers • Population density within ¼ mile (residents/acre projected for 2035) • Ratio of population to employment within ¼ mile (2035)
Market Impact Assessment	• Percentage increase in development growth within ¼ mile of the corridor expected as a result of this transit investment (only includes new development to the region, not shifts within the region) • Net new development to the region resulting from this transit investment (sq. ft. within ¼ mile of the corridor) – total along corridor • Net new development to the region resulting from this transit investment (sq. ft. within ¼ mile of the corridor) – per corridor mile
Capital Cost Estimate Range	• Capital cost per corridor mile for corridor construction
Ridership Projection Range	• Ridership projection range (average weekday ridership) • Ridership projection range per corridor mile • Comparison with existing transit lines in other U.S. cities
Contribution to Regional Transit and Multi-modal Network	• Connections to other proposed transit corridors (LRT, BRT, streetcar, ferry, commuter rail, and express bus) and existing major bus transfer facilities • Extent of existing pedestrian and bicycle network (e.g., sidewalks, bike lanes, multi-use paths, narrow low-speed streets), providing safe and convenient connectivity throughout the area, not just within a development site.

The detailed methodologies, findings and initial recommendations of the analyses listed above are reported in a series of technical memoranda. Summaries of the findings are included as appendices to this report.

[2] Promotional campaign schedule and budget were developed as part of the Phase 2 Study for information purposes only; no funding or sponsors have been designated.

2.2 Study Participants and Stakeholder Outreach

Project Management Team

The study was directed by a Project Management Team that consisted of representatives of DRPT, HRT, WATA, and the consultant team of AECOM, Rhodeside & Harwell and Pulsar Advertising. The team met on a monthly basis throughout the project, from October 2009 through January 2011.

Steering Committee

Additional guidance was provided by a project Steering Committee, which consisted of representatives of local governments, regional agencies, state agencies and other major stakeholders. The committee met six times over the course of the study. The following agencies participated in the committee:

- **Local governments** – City of Chesapeake, Gloucester County, City of Hampton, Isle of Wight County, James City County, City of Newport News, City of Norfolk, City of Poquoson, City of Portsmouth, City of Suffolk, City of Virginia Beach, City of Williamsburg, and York County;
- **Regional agencies and civic groups** – HRT, WATA, HRTPO, Hampton Roads Planning District Commission (HRPDC), and Hampton Roads Partnership;
- **State agencies** – DRPT and VDOT;
- **Federal agencies** – U.S. Navy; and
- **Consultant team** – AECOM, Rhodeside & Harwell, and Pulsar Advertising.

The Steering Committee reviewed all draft technical memoranda and provided comment on study findings and recommendations.

Regional Transportation Planning and Transit Agency Boards

The study team briefed the governing boards and technical advisory boards of regional transportation and transit agencies. Presentations of draft study findings were made to the HRT Board, WATA Board, HRTPO Board, and HRTPO Transportation Technical Advisory Committee (TTAC) in Fall 2010. The final study recommendations will be presented to these boards in March 2011, and board resolutions to endorse the Plan will be considered.

Public Meetings and Feedback

The study conducted two public meetings, on the evenings of November 30 and December 1, 2010, to present draft findings and gather feedback from the general public. One meeting was held on the Peninsula (Oyster Point Town Center, Newport News) and one was held on the Southside (HRT offices, Norfolk). Approximately 35 members of the general public and stakeholder agencies attended the Peninsula meeting, and approximately 57 members of the public and stakeholder agencies attended the December 1 meeting.

The meetings were conducted in an open house format with display boards, a PowerPoint presentation, and question-and-answer session. Comment sheets were collected at the end of the meeting, and project staff was available to answer questions one-on-one before and after the formal program. The public was also given the opportunity to submit written comments by mail and email via DRPT's project website through the end of December 2010. Comments were reviewed by the study team and taken into account in the preparation of the Final Report. Meeting presentation materials and handouts were made available to the public on the DRPT website.

Transit Planning and Governance in the Hampton Roads Region

In reviewing the recommendations of the HRRTVP, it is important to note that any decisions to support new transit projects in the Hampton Roads region of Virginia, either through capital or operations funding, are subject to the policies and direction of the area's transit providers and local government jurisdictions. In addition, as a requirement for receiving federal funding for transit, proposed projects must be included in adopted regional plans and funding allocations of HRTPO.

3.0 Final Recommendations

Based on the corridor evaluation results, a phasing strategy for the Vision Plan network was developed. Corridors that ranked lower in supportive land use or market potential were recommended for later implementation to allow local jurisdictions to develop appropriate land use policies. Likewise, corridors with lower ridership expectations were also recommended for later implementation to allow additional residential and employment growth within their activity centers and potential station areas. A set of corridors that could begin to create a regional multi-modal network by building on existing transit facilities and connecting major regional destinations was included in each implementation phase. For purposes of this study, certain assumptions were made regarding the transit mode operating in each corridor. As these corridors move forward into the project development phase, it is understood that a full consideration of alternatives under applicable National Environmental Policy Act (NEPA) and U.S. Department of Transportation guidelines, including those of the Federal Transit Administration (FTA) and Federal Rail Administration (FRA), will be followed.

3.1 Fixed Guideway and Ferry Corridors

Table ES-2 on the following page provides an overview of the draft recommendations for LRT, BRT, streetcar, commuter rail and high-speed ferry corridors, including timeframes for each corridor. Note that within implementation timeframes, there is no corridor prioritization; corridors are listed in alphabetical/numerical order. The sections that follow provide detailed descriptions of the corridors, their relevant evaluation results, and their roles in the phased creation of a larger regional transit network. Figures ES-1 through ES-4 show the phasing and completed network of these corridors.

Harbor crossings are an important element of transportation in the Hampton Roads region. The HRRTVP proposes new transit services connecting the Peninsula and Southside, including high-speed ferry and rail transit, but also recognizes other ongoing studies for new or improved harbor crossings that consider mass transit facilities. The Vision Plan recommends that any new harbor or river crossings include dedicated facilities for transit, which is consistent with HRT's December 2008 resolution that "the Commonwealth of Virginia consider adding mass transit as a component of any major transportation link, tunnel, bridge or roadway in Hampton Roads." If proposals for a new harbor Third Crossing facility or modifications to the Hampton Roads Bridge-Tunnel (HRBT) move forward into more detailed planning and design phases, the Vision Plan recommends the inclusion of a dedicated transit facility in either of those proposals.

As a first step in expanding transportation options connecting the Peninsula and Southside, the HRRTVP recommends new high-speed ferry services in the short-term. Additional harbor crossing recommendations are made for the extended-term, including a new fixed guideway transit crossing. The relationship between HRRTVP proposals and other regional harbor crossing proposals is discussed in more detail in Section 3.1.3.

Table ES-2: Fixed Guideway Transit, Ferry and Commuter Rail Recommendations

Corridor #	Corridor Name	Mode
Short-Term (By 2025)		
F1	Downtown Newport News to Naval Station North and Harbor Park	High-Speed Ferry
F2	Downtown Hampton to Naval Station North and Harbor Park	High-Speed Ferry
F3	Downtown Portsmouth to Downtown Norfolk	High-Speed Ferry
I	Downtown Norfolk to Norfolk Naval Station	Light Rail
L	The TIDE (under construction)	Light Rail
M	TIDE Extension to Virginia Beach	Rapid Transit* (mode under study)
Long-Term (By 2035)		
A	Downtown Newport News to Williamsburg	Commuter Rail
B	Christopher Newport University to Huntington Pointe	Light Rail
C	Downtown Newport News to Christopher Newport University	Light Rail
K	Harbor Park to Portsmouth Downtown/Midtown Loop (future extension to Harbor Park)	Streetcar
N	Harbor Park to Greenbrier	Light Rail
Extended-Term (After 2035)		
A	Extension from Williamsburg to Lightfoot and Toano	Commuter Rail
D	Phoebus Waterfront to Coliseum Central	Streetcar
E	Downtown Newport News to Downtown Hampton	Light Rail
F4	Downtown Hampton to Harbor Park (direct)	High-Speed Ferry
F5	Downtown Newport News to Harbor Park (direct)	High-Speed Ferry
F6	Harbour View to Downtown Newport News and Downtown Hampton	High-Speed Ferry
G	Downtown Newport News to Norfolk Naval Station	LRT-Only Tunnel
H	Harbor Park to Harbour View (via Downtown Portsmouth)	Bus Rapid Transit (LRT possible in the future)
J	Extension of TIDE from Military Highway Station to Naval Station	Light Rail
K	Extension of Portsmouth Streetcar to Harbor Park	Streetcar
N	Extension from Greenbrier to the TIDE's Military Highway Station	Light Rail
O	Harbor Park to Downtown Suffolk	Commuter Rail
P	Harbor Park to Fentress (possible future extension to North Carolina)	Commuter Rail

*Rapid Transit includes various transit modes (e.g., LRT and BRT) with a dedicated and fixed guideway that enables them to operate separately from other modes of transportation. Corridor M is currently being evaluated under a separate study that is comparing various project alternatives that involve different transit modes.

3.1.1 Corridors for Short-Term (2025) Implementation

- Corridor F1: Downtown Newport News to Naval Station North to Harbor Park (High-Speed Ferry)
- Corridor F2: Downtown Hampton to Naval Station North and Harbor Park (High-Speed Ferry)
- Corridor F3: Downtown Portsmouth to Downtown Norfolk (High-Speed Ferry, upgrade of existing service)
- Corridor I: TIDE extension from Downtown Norfolk to the Naval Station (LRT)
- Corridor L: Complete construction of The TIDE (LRT)
- Corridor M: TIDE extension to Virginia Beach (Rapid Transit)

Figure ES-1 shows the Short-Term corridor recommendations.

Corridor F1: Downtown Newport News to Naval Station North and Harbor Park (High-Speed Ferry); and
Corridor F2: Downtown Hampton to Naval Station North and Harbor Park (High-Speed Ferry)

These high-speed ferry services are intended to provide strong transportation alternatives for commuters crossing from the Peninsula to the Southside, and vice versa. At this time, there are major employment centers in downtown Newport News, Naval Station, and downtown Norfolk to support these ferry lines. However, in order for this service to be successful, it will be critical that there be safe and convenient transit, pedestrian, and bicycle access at each stop on the ferry line.

Corridor F3: Downtown Portsmouth to Downtown Norfolk (High-Speed Ferry)

Ferry service exists today between Portsmouth and Norfolk. The proposed corridor for this study is an upgraded, higher-speed service that will eventually connect to the proposed multi-modal hub at Harbor Park. Downtown Portsmouth and downtown Norfolk are both major regional employment centers and have pedestrian-oriented land use patterns to support convenient access to the ferry.

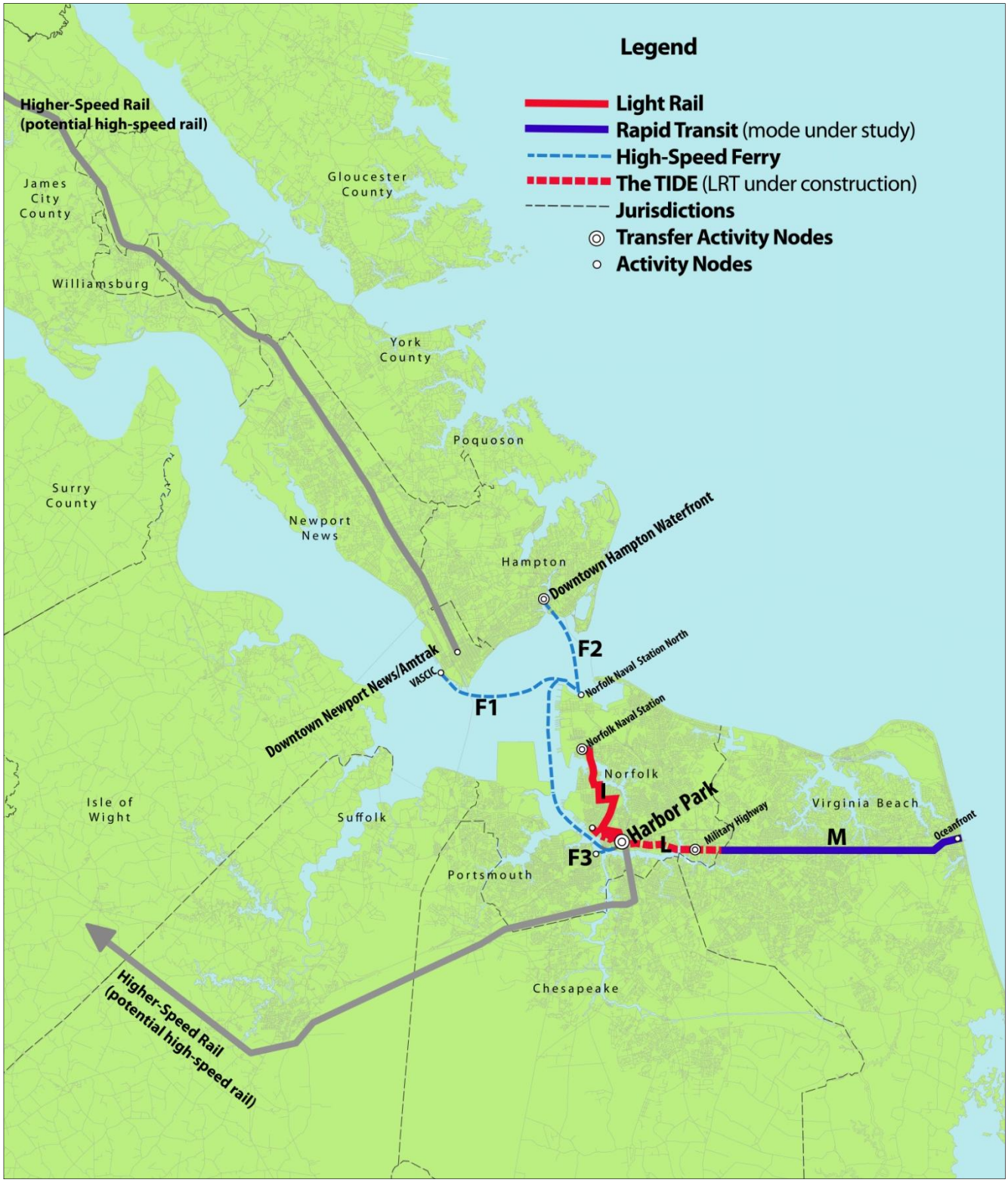
Corridor I: TIDE extension from Downtown Norfolk to the Norfolk Naval Station (LRT)

The strengths of the corridor are its existing TOD pattern, resulting largely from its history as a streetcar neighborhood; its direct connections to three major employers, in addition to a university campus; and its location as an immediate extension of The TIDE light rail currently under construction. It has the highest population density of all the corridors and has average to high ridership expectations compared with the other corridors. Norfolk's small area planning and zoning support continued TOD-type growth patterns.

Corridor M: TIDE extension to Virginia Beach (Rapid Transit)

The strengths of this corridor begin with the fact that it is well advanced in the planning process. It is currently undergoing Alternatives Analysis and Supplemental Environmental Impact Statement processes as part of the Virginia Beach Transit Extension Study. Corridor M is proposed as a direct rapid transit extension of The TIDE light rail currently under construction. As part of the current study, there are various rapid transit modes (i.e., rail or bus transit modes with a dedicated and fixed guideway that enables them to operate separately from other modes of transportation) as well as an enhanced bus alternative and a No Build alternative that are being evaluated as potential alternatives to serve the corridor. The City of Virginia Beach has adopted strong TOD plans and policies for proposed station locations along the corridor, known as "strategic growth areas." The market analysis projects a high impact in all sectors, resulting from construction of this transit corridor.

Figure ES-1: Short-Term Implementation Recommendations (By 2025)



3.1.2 Long-Term (2035) Recommendations

Projects included in the long-term recommendations are potentially strong candidates for implementation but have some limitations on their potential performance that must be addressed by the appropriate localities before they are ready for further planning and implementation.

The long-term recommendations are organized into Southside projects and Peninsula projects for ease of presentation and discussion. Figure ES-2 shows the Long-Term corridor recommendations.

Southside Long-Term Projects

- Corridor K: Portsmouth Downtown/Midtown Loop (Streetcar) (further extension to Harbor Park in the extended-term)
- Corridor N: Harbor Park to Greenbrier (LRT) (further extension to The TIDE's Military Highway Station in the extended-term)

Corridor K: Portsmouth Downtown/Midtown Loop, Constitution Avenue to Ferry Landing (Streetcar) with Extension to Harbor Park in the future.

The strengths of this corridor are its existing pedestrian-oriented and mixed-use character, and its highly TOD-supportive land use planning and zoning/form-based development code. In addition, the market development potential of this corridor is relatively strong for growth in residential, retail, and office development within a quarter mile.

The primary hurdle for this corridor is the inability to extend streetcar tracks and overhead wiring through the existing Downtown Tunnel to provide a connection to Norfolk and the Harbor Park transfer hub. As discussions continue for upgrades to the Downtown Tunnel, it will be critical that tunnel redesign options that add travel lanes also include a *dedicated transit lane* for streetcar service, in addition to extended-term BRT or possibly LRT service (Corridor H), and any express or enhanced bus services using the tunnel. Downtown Tunnel redesign options that do not add travel lanes should dedicate a shared HOV/transit lane or other types of priority treatments for transit vehicles. Over time, technology may become available to extend streetcar service through the existing tunnel, or transition the transit vehicle from rail to rubber tire for travel through the tunnel.

Until rapid transit service becomes feasible through the Downtown Tunnel, high-speed ferry service (Corridor F3) should be available between Portsmouth and Norfolk. This proposed Corridor F3 is an upgrade to the ferry service existing today.

Corridor N: Harbor Park to Greenbrier (LRT)

(Note: Further extension of this corridor from Greenbrier to The TIDE's Military Highway Station is recommended for the extended-term.)

The strengths of Corridor N are its direct connections to The TIDE and the proposed Harbor Park transit hub and its provision of rapid transit service between downtown Norfolk and Greenbrier, two of the region's largest employment centers. The market impact assessment is high for all market segments, and projected ridership is high compared with the other corridors under study.

This corridor's significant limitation is its existing auto-oriented development pattern and the lack of policy controls to ensure future conversion to a transit-oriented growth pattern. Zoning along this corridor generally allows for TOD patterns; Chesapeake has a mixed-use higher-density zoning overlay that could be applied; and small area plans in Norfolk and Chesapeake call for transit-supportive development along this corridor. However, these tools do not offer strict controls on growth, and low-density single-use development is emerging in areas designated in

local planning documents for future transit station area activities. Light rail on this corridor will not be viable unless higher-intensity, mixed-use, and pedestrian-oriented growth occurs.

Peninsula Long-Term Projects

- Corridor A: Downtown Newport News to Williamsburg (Commuter Rail)
- Corridor B: Christopher Newport University to Huntington Pointe (LRT)
- Corridor C: Downtown Newport News to Christopher Newport University (LRT)

Peninsula transit planning is a critical component of the Hampton Roads regional transit vision. The Hampton Roads Harbor creates a significant challenge for transportation connectivity across the region and disconnects Newport News and Hampton from the momentum of the region's first rapid transit link. However, regional transit connectivity is realistic and attainable with careful planning and focused growth strategies.

Efficient and dependable high-speed ferry service is recommended in the short-term to connect the Peninsula jurisdictions to the proposed Southside multi-modal hub at Harbor Park and the major employment center at the Naval Station (Corridors F1 and F2). For this high-speed ferry service to be successful, the ferry landing areas themselves should be important pedestrian-oriented destinations (downtown Newport News and downtown Hampton), and convenient transit transfer options must be available to reach other Peninsula destinations.

This study recommends that downtown Newport News become the transit network's regional multi-modal hub for the Peninsula (corresponding with Harbor Park as the multi-modal hub on the Southside). Over time, this Peninsula transit hub would support LRT, commuter rail, passenger rail (Amtrak), and ferry service extending in all directions.

Given regional transit network priorities, the Peninsula's first transit corridor should be one that responds to short-term high-speed ferry service to the Southside, the major employment centers in downtown Newport News and at Oyster Point, and the potential for making downtown Newport News the Peninsula's multi-modal hub. Proposed LRT Corridor C: Downtown Newport News to Christopher Newport University (LRT) achieves all of these goals.

Corridor A: Downtown Newport News to Williamsburg (Commuter Rail)

This proposed commuter rail corridor builds on an already important express bus service between Newport News and Williamsburg. Due to the high employee transit demand in Williamsburg (caused by its large tourism industry and retirement community) and the high employment demand in Newport News, commuting between these two cities is common. The College of William and Mary/Colonial Williamsburg/downtown Williamsburg, City Center at Oyster Point, and Downtown Newport News are all major employment centers immediately along the corridor. The Newport News/Williamsburg International Airport is also located along this corridor.

The overall ridership rating for Corridor A is medium. The capital cost estimate rating for this corridor, as for all the commuter rail corridors in this study, is high (reflecting the relatively low capital cost estimate). The jurisdictions with likely station locations along this corridor should focus on improvements to comprehensive planning and zoning for TOD.

Freight rail and proposals for increased passenger rail frequency will place increasing demand on this corridor in the near future. These capacity issues will need to be addressed as part of commuter rail implementation on this corridor. Due to these capacity constraints, commuter rail service is unlikely on this corridor within the short-term; however, increased Amtrak service is one way to provide public transportation improvements for longer trips prior to commuter rail implementation. Currently Amtrak provides service along the Corridor A alignment as part of its Northeast Corridor passenger rail service.

Corridor B: Christopher Newport University to Huntington Pointe (LRT)

The City of Newport News has invested significant effort in studying the transit and TOD potential for Corridor B and has included the project in its comprehensive plan. Numerous Newport News planning reports support the transit-oriented vision of this corridor. The existing City Center at Oyster Point is a high-density, mixed-use, pedestrian-oriented development consistent with TOD principles. There is an Amtrak station proposed for the City-owned Bland Boulevard site along this corridor. Market analysis shows a medium draw for transit-related new development to the area, the construction capital cost estimate is average, and ridership level projections are high compared with the other corridors under study.

Although several mixed-use, pedestrian-oriented developments exist along this corridor, such as City Center at Oyster Point and Warwick Village, these developments are not well connected to adjacent residential and employment centers by pedestrian-oriented street networks. Single-use development dominates the area and the corridor remains a highly auto-oriented environment.

Several new mixed-use developments have been approved along this corridor. Additionally, the November 2009 TOD Strategy for the Peninsula Rapid Transit Project (City of Newport News) makes several recommendations for potential TOD policy improvements. The potential for Corridor B transit should be reevaluated as these development projects emerge and the City makes decisions about new transit-supportive policies that would improve the suitability of the corridor's land use.

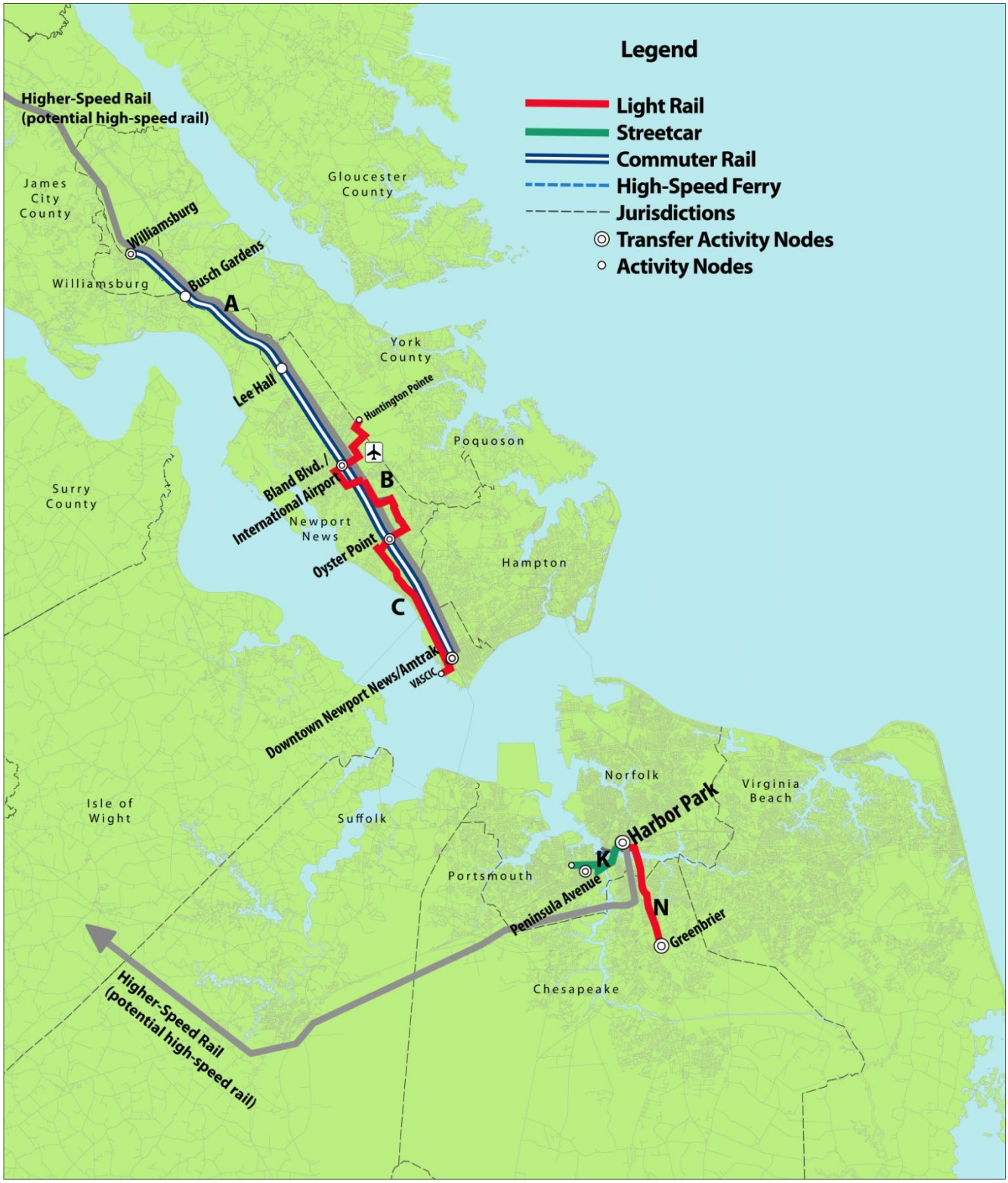
Corridor C: Downtown Newport News to Christopher Newport University (LRT)

This corridor's strengths are its link between two major employment centers (Oyster Point and downtown Newport News) and its connection to the proposed Peninsula multi-modal transit hub in downtown Newport News. A transfer at the transit hub would offer high-speed ferry crossings of Hampton Roads Harbor to Norfolk Naval Station and Harbor Park (Corridor F1). Additionally, commuter rail service to Williamsburg (Corridor A) and Amtrak passenger rail service are recommended for downtown Newport News in the long-term. A light rail connection to downtown Hampton (Corridor E) and rail service to the Southside (Corridor G) from downtown Newport News are proposed for the extended-term.

Another strength of this corridor is the existing pedestrian-oriented and transit-friendly urban fabric of this portion of Newport News, including downtown and Hilton Village. This pattern is reflective of the corridor's former streetcar service. Downtown Newport News has a grid network of narrow streets and short blocks, buildings adjacent to sidewalks, a major regional employer (the shipyard), and large amounts of redevelopable land. This corridor also connects to four other proposed corridors in this Vision Plan.

The downtown suffers from significant disinvestment stemming from post-World War II population shifts to the suburbs. Newport News planning documents consistently refer to downtown as a priority area in need of revitalization but with strong redevelopment potential. The market analysis shows this corridor as a medium draw to bring new development to the region, the capital cost estimate is average compared with the other light rail corridors under study, and ridership levels are also average compared with the other corridors.

Figure ES-2: Long-Term Implementation Recommendations (By 2035)



3.1.3 Extended-Term (beyond 2035) Recommendations

Projects included in the extended-term recommendations are projects that need time and targeted policies for transit-supportive land uses and densities to emerge, or that require prior construction of other transit projects to connect them to the regional network. Figure ES-3 shows the Extended-Term corridor recommendations and Figure ES-4 shows the complete network.

Southside Extended-Term Projects

- Corridor H: Harbor Park to Harbour View, via Downtown Portsmouth (BRT, possible future LRT)
- Corridor J: Extension of The TIDE from Military Highway Station to Norfolk Naval Station (LRT)
- Corridor N: Extension of the long-term section of Corridor N from Greenbrier to The TIDE's Military Highway Station (LRT)
- Corridor O: Harbor Park to Downtown Suffolk (Commuter Rail)
- Corridor P: Harbor Park to Fentress (Commuter Rail) – *possible future extension to North Carolina*

Corridor H: Harbor Park to Harbour View, via Downtown Portsmouth (BRT, possible future LRT)

This corridor can be an important transit link over the extended-term as Suffolk's Harbour View area emerges as a major growth center. However, to attain the TOD patterns needed to support rapid transit on this corridor, a coordinated multi-jurisdictional vision will be necessary. Portsmouth has adopted TOD-supportive plans and policies for the portions of Corridor H southeast of the Western Branch of the Elizabeth River. Ensuring that transit-supportive development occurs in the northwest portion of the corridor will require that Suffolk, Chesapeake, and Portsmouth work together to establish consistent transit-supportive development policies.

High-speed ferry services should also be considered between Harbour View and Downtown Newport News and between Harbour View and Hampton Waterfront in the extended-term (Corridor F6).

Corridor J: Extension of The TIDE from Military Highway Station to Norfolk Naval Station (LRT)

Significant investment and policy emphasis will be needed to transform this corridor from an auto-oriented shopping center district to a transit-oriented corridor. The extended-term strengths of this corridor are the many redevelopment opportunities on relatively large parcels with single owners and its close proximity to the Norfolk International Airport. Connections from Virginia Beach to Norfolk Naval Station are currently well served by express bus service in the I-64 HOV lanes; the proposed LRT service on the Military Highway/Little Creek Road corridor would serve some of this travel market but also offer access to local services and residences.

Corridor N: Extension of Corridor N from Greenbrier to The TIDE's Military Highway Station (LRT)

The Military Highway/Regent University segment of Corridor N is an important opportunity corridor for TOD. The Chesapeake/Virginia Beach section of Military Highway currently serves as a major auto-oriented arterial roadway and is lined with declining retail and industrial centers. Regent University is a growing institution in Virginia Beach and within one of Virginia Beach's designated Strategic Growth Areas (SGAs). Corridor N is proposed to connect directly with Corridor J at The TIDE's Military Highway Station. As described above, Military Highway in Norfolk is also lined with significant redevelopment opportunities. As a result, a coordinated vision between Norfolk, Chesapeake, and Virginia Beach would allow the communities to shape the future of this area, over time, to develop land use patterns supportive of the proposed light rail connections.

Corridor O: Harbor Park to Downtown Suffolk (Commuter Rail)

Proposed Corridor O's direct connection to the proposed transit hub at Harbor Park and the major employment center in downtown Norfolk are its primary strengths. Other major employment centers to which this corridor connects are downtown Portsmouth (with another proposed transit hub at Peninsula Street) and downtown Suffolk.

Corridor O also intersects with the proposed higher speed (potentially high-speed) rail station at Bowers Hill. Downtown Portsmouth and downtown Suffolk already have pedestrian-oriented, mixed-use urban design patterns and also have zoning codes to support future growth in TOD patterns.

Challenges faced by this corridor are the lack of an easy rail connection between downtown Portsmouth and Harbor Park, and the low ridership levels projected at this time.

Note: Portions of this rail corridor are currently under evaluation by the Commonwealth as part of its higher-speed rail planning. There is a possibility that some passenger rail service (one to two trains per day) could travel parts of this corridor earlier than 2035. Such a service would cover a distance further than what is proposed for commuter rail service in this study.

Corridor P: Harbor Park to Fentress (Commuter Rail) – *with possible future extension to destinations in North Carolina*

The Corridor P strengths center on its direct connection between the proposed Harbor Park regional multi-modal hub and the City of Chesapeake's major future growth area in the Clearfield area and the area just south of the Southern Branch of the Elizabeth River.

It will be important for the City of Chesapeake to begin planning and zoning for this area in order to achieve a TOD pattern at likely station locations over time. Across the country there are increasing examples of TOD on commuter rail corridors. In fact, DRPT completed a TOD plan for the I-95/I-64 Amtrak corridor in 2008.

Peninsula Extended-Term Projects

- Corridor A: Extension from Williamsburg to Lightfoot and Toano (Commuter Rail)
- Corridor D: Phoebus Waterfront to Coliseum Central (Streetcar)
- Corridor E: Downtown Newport News to Downtown Hampton (LRT)

Corridor A: Extension from Williamsburg to Lightfoot and Toano (Commuter Rail)

The extension of the Corridor A commuter rail line from Williamsburg to Lightfoot and Toano will largely depend on the land use patterns that emerge in James City County's and York County's expected major growth area, known as Lightfoot. The likely station location in Lightfoot is designated as an Economic Opportunity site in the James City County and York County Comprehensive Plans. This site designation allows, but does not require, transit-oriented uses, such as vertical mixed-use development and structured parking. The York County Comprehensive Plan designates this area as a potential mixed-use node. If commuter rail is to extend to Lightfoot and Toano, the counties will need to develop a land use vision to support successful commuter rail service to this area.

Corridor D: Phoebus Waterfront to Coliseum Central (Streetcar)

This corridor would be a valuable economic development investment for the City of Hampton; however, it is placed in the extended-term recommendations for this regional transit study. The reason for this placement is primarily that of relative contribution to the regional transit network compared with other potential long-term recommendations.

Currently the development focus in Hampton is the Coliseum area. This area is located at the end of Corridor D and does not provide access to other rapid transit corridors in the vision plan. (Enhanced bus service is recommended between the Coliseum area and Oyster Point, and between the Coliseum area and the major employment node at NASA/Langley.) Proposed streetcar Corridor D also connects with proposed light rail Corridor E. Due primarily to land use conditions along the corridor and at each end of Corridor E, however, it is also placed in the extended-term.

The City of Hampton should consider pursuing the streetcar concept in the short- or long-term as a way to shape the city's growth into a livable, walkable environment. The proposed streetcar location links numerous existing low- to medium-density, pedestrian-oriented, mixed-use neighborhoods in Hampton and could provide a strong backbone for economic development in the city. It is important that the city not lose sight of its strong TOD potential in the face of growth demands. Policies will be necessary to ensure that growth occurs in patterns supportive of streetcar service.

Corridor E: Downtown Newport News to Downtown Hampton (LRT)

The Peninsula's challenges with regard to planning major transit investments are described throughout this section. Corridor E could provide an important link over time between the downtowns of Newport News and Hampton. Downtown Newport News is a major employment center, but also suffers from disinvestment. Downtown Hampton is a secondary employment center for the region. At this time, both cities are focusing development efforts outside of the historic downtowns.

Harbor Crossing Extended-Term Projects

- Corridor F4: Downtown Hampton to Harbor Park (High-Speed Ferry)
- Corridor F5: Downtown Newport News to Harbor Park (High-Speed Ferry)
- Corridor F6: Harbour View to Downtown Newport News and Downtown Hampton (High-Speed Ferry)
- Corridor G: Downtown Newport News to Norfolk Naval Station (LRT-only tunnel)

Corridor F4: Downtown Hampton to Harbor Park (High-Speed Ferry); and
Corridor F5: Downtown Newport News to Harbor Park (High-Speed Ferry)

As the regional transit service expands and ridership increases, there likely will be enough demand for ferry service to provide direct high-speed ferry service between Harbor Park and Downtown Hampton, and Harbor Park and Downtown Newport News. For the short- and long-terms, it is expected that the high-speed ferry service will stop at Naval Station North in making these Peninsula to Harbor Park (and vice versa) connections (Ferry Corridors F1 and F2).

Corridor F6: Harbour View to Downtown Newport News and Downtown Hampton (High-Speed Ferry)

As Suffolk's Harbour View area grows, high-speed ferry service to downtown Newport News and downtown Hampton may be a valuable regional transit service. This determination will largely depend on the land use pattern that emerges at Harbour View and at the Peninsula downtown destinations.

Corridor G: Downtown Newport News to Norfolk Naval Station (LRT-only tunnel)

A transit connection between the Peninsula and the Southside is critical for creating a complete regional transit network. The capital cost for an LRT-only tunnel is significant; however, it is consistent with the level of investment required for the Third Crossing and the Hampton Roads Bridge-Tunnel expansion projects. Corridor G is not intended to follow the proposed Third Crossing alignment. It represents a light rail transit harbor crossing that optimizes transit service between the Peninsula and Southside, and throughout the region, by providing a direct connection between proposed rail transit corridors and transfer activity nodes on both sides of the harbor.

As noted above, the Vision Plan also recommends that dedicated transit facilities be included in new harbor crossing proposals. The advantage of Corridor G over dedicated transit facilities in the Third Crossing or HRBT is that Corridor G optimizes the overall transit network, whereas the routes of transit facilities in the Third Crossing or HRBT would be largely dictated by the region's highway network. If other new/improved harbor crossing facilities proceed into design and implementation phases, planning for Corridor G and other Vision Plan corridors should

consider the extent to which dedicated transit facilities are included in the crossings, how these facilities can be incorporated into the regional transit network, and how corridor plans might need to be modified as a result.

Implementation of a comprehensive transit and land use vision for the Hampton Roads region, including a transit-only tunnel, would expand options for travelers and help accommodate increases in travel demand. This could postpone, or eliminate, the need for highway bridge/tunnel expansions. Regional authorities should seriously consider this opportunity to create an efficient public transportation option and a high-capacity alternative to the economically burdensome bridge/tunnel congestion.

Figure ES-3: Extended-Term Implementation Recommendations (After 2035)

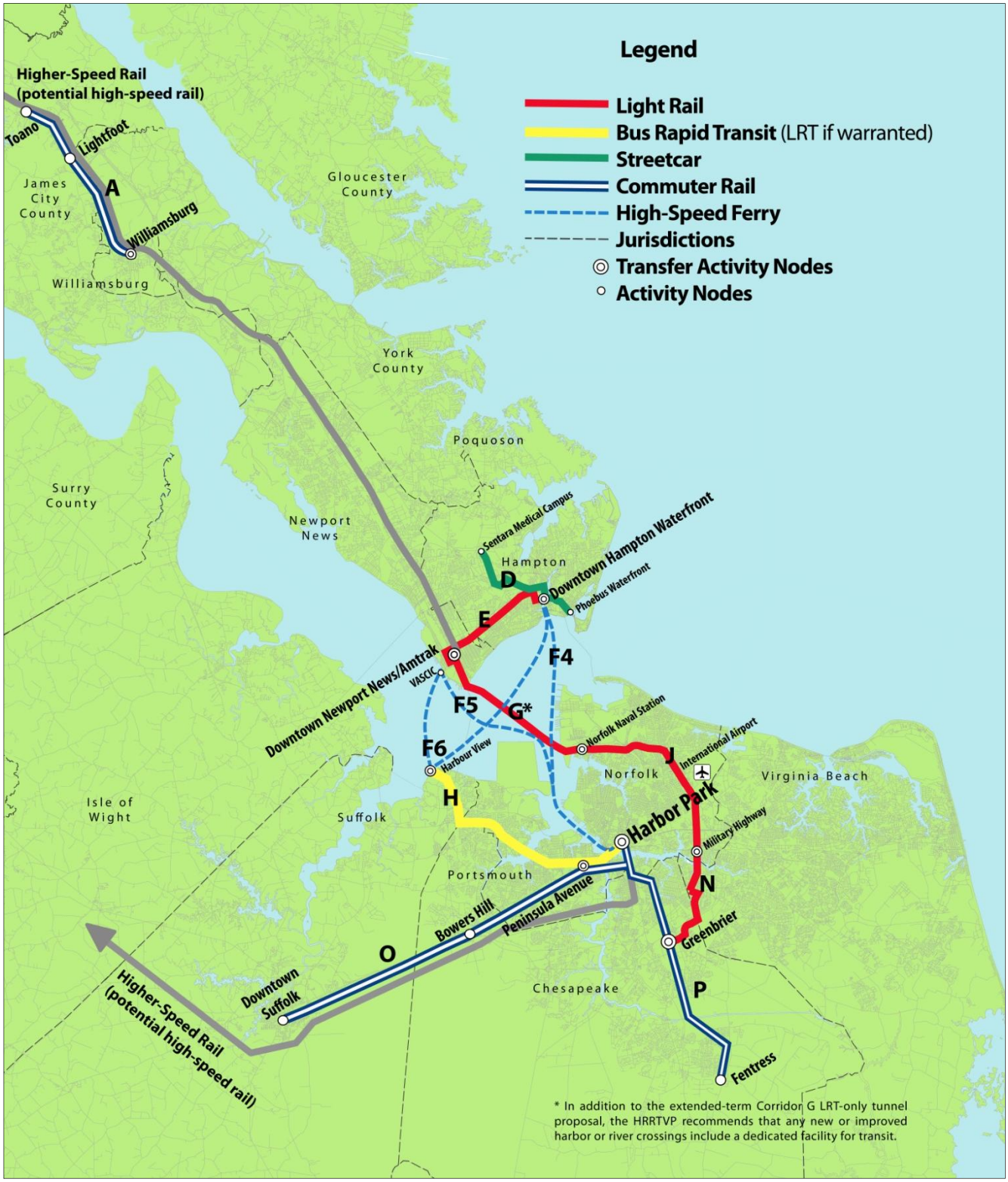
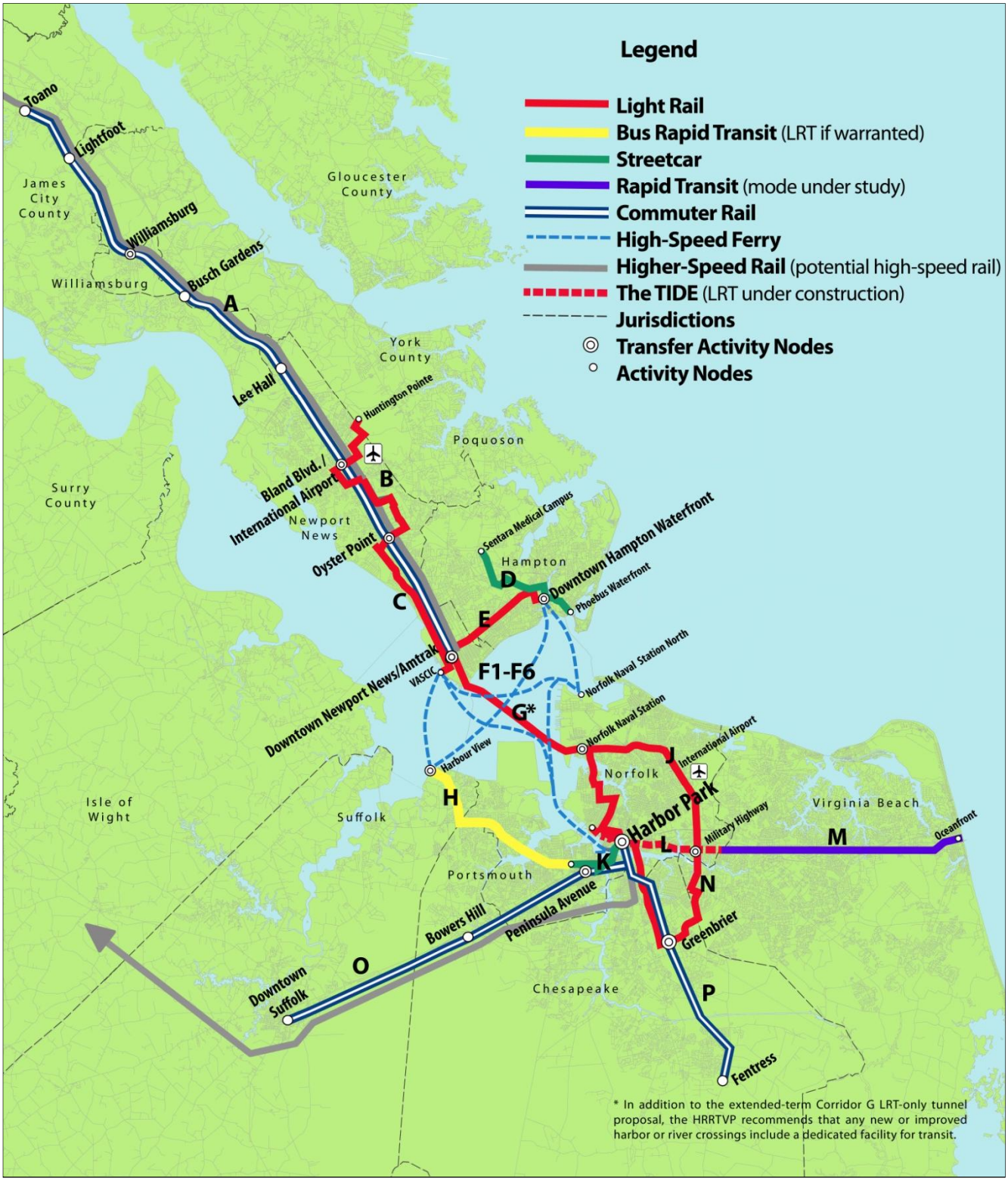


Figure ES-4: Overall Regional Transit Vision Plan



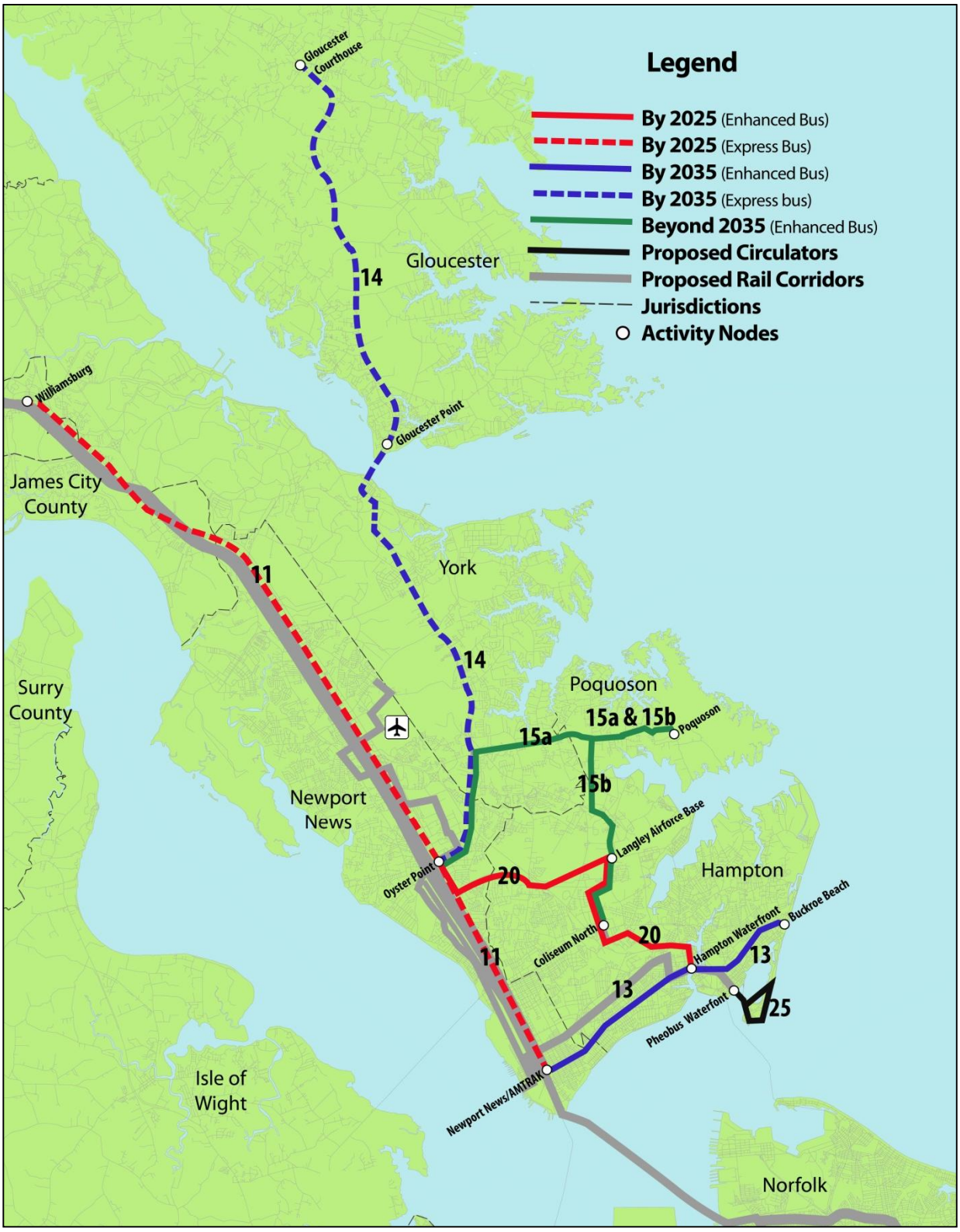
3.2 Express and Enhanced Bus Corridors and Circulator Services

The refined network of express bus and enhanced bus corridors is phased to correspond with implementation of the new fixed guideway transit corridors described above. These corridors provide transit service in areas with densities not yet able to support fixed guideway transit or commuter rail. Some of these corridors are phased to be later replaced by rail transit (e.g., express bus Corridor 9A from Downtown Suffolk to Harbor Park) or BRT (e.g., enhanced bus Corridor 8b from Harbor Park to Harbour View). Table ES-3 lists the recommended corridors and timeframes for implementation. Figures ES-5 and ES-6 show the locations of the corridors.

Table ES-3: Express and Enhanced Bus and Circulator Service Recommendations

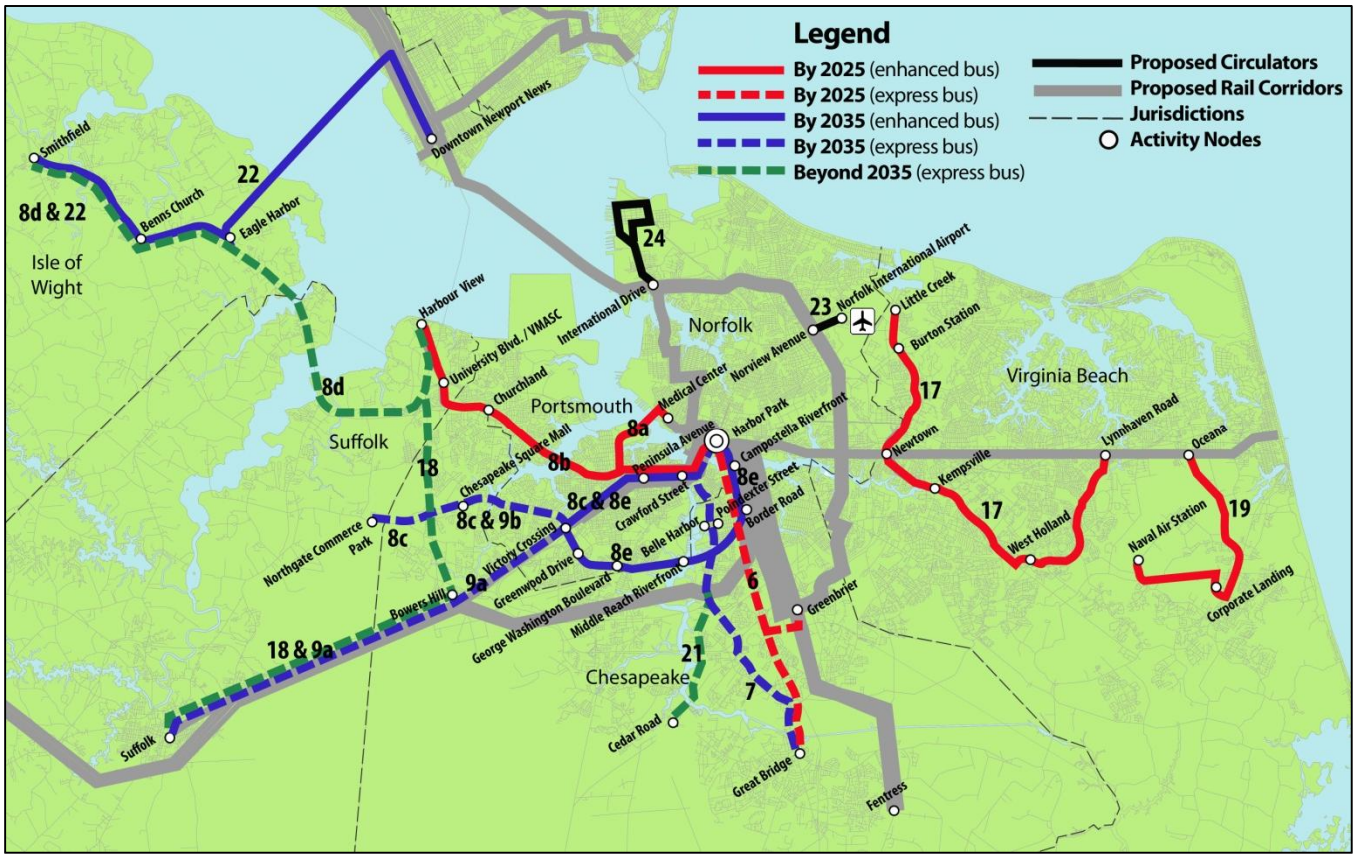
Corridor #	Corridor Name	Mode
Short-Term (By 2025)		
6	Harbor Park to Great Bridge	Express Bus
8a	Norfolk Hospital to Portsmouth via Midtown Tunnel	Enhanced Bus
8b	Harbor Park to Harbour View	Enhanced Bus
11	Downtown Newport News to Williamsburg	Express Bus
17	Princess Anne Road and Lynnhaven Pkwy	Enhanced Bus
19	Oceana Transit Station to Oceana Naval Air Station	Enhanced Bus
20	Downtown Hampton to Oyster Point	Enhanced Bus
Long-Term (By 2035)		
7	I-464/Route 168, Norfolk to Chesapeake (future extension to North Carolina)	Express Bus
8c	Downtown Portsmouth to Northgate Commerce Park	Express Bus
8e	Portsmouth to Victory Crossing to Harbor Park	Enhanced Bus
9a	Harbor Park to Downtown Suffolk	Express Bus
9b	Norfolk, Portsmouth, Chesapeake Square Mall	Enhanced Bus
13	Downtown Newport News to Hampton/Buckroe Beach	Enhanced Bus
14	Gloucester County to Oyster Point	Express Bus
22	Smithfield to Downtown Newport News	Enhanced Bus
Extended-Term (After 2035)		
8d	Harbour View to Smithfield	Express Bus
15a	Oyster Point to Poquoson	Enhanced Bus
15b	Poquoson to Langley to Coliseum Central	Enhanced Bus
18	Downtown Suffolk to Bowers Hill to Harbour View	Express Bus
21	Downtown Norfolk to Deep Creek (future extension to North Carolina)	Express Bus
Implementation in conjunction with associated rail transit corridors		
23	Norview Avenue to Norfolk International Airport	Circulator Bus
24	International Drive into Norfolk Naval Station	Circulator Bus
25	Phoebus Waterfront to Fort Monroe	Circulator Bus

Figure ES-5: Peninsula Bus Network Recommendations



Note: Existing HRT and WATA routes are not shown on map

Figure ES-6: Southside Bus Network Recommendations



Note: Existing HRT and WATA routes are not shown on map

4.0 Next Steps

For implementation, the Vision Plan will need to be carried forward both at the local and regional levels. Individual transit corridors require support by local communities; the link with land use planning requires consideration of the corridors in local comprehensive and small area planning and development policies. Achieving multi-modal connections and creating a larger network requires regional coordination. Thus, a combination of detailed local corridor-level studies and incorporation into regional transportation planning will be necessary.

To support implementation of the Vision Plan, the Phase 2 study prepared a promotional and marketing framework and a series of recommendations for how local governments can foster transit-supportive land use policies along proposed corridors in their jurisdictions.

4.1 Building Awareness and Support for the Vision Plan

Key to the success of this plan will be public input and common understanding of the plan. A critical step will be information/marketing and public outreach strategies. The strategies will help ensure that the general public and stakeholders are fully aware of and engaged in the development and implementation of the vision, the process, recommendations, as well as the benefits of transit. This framework for promoting and marketing the plan is intended to convey the recommendations of the transit vision plan to the community via the following elements:

- Development of key messages (e.g., talking points) to communicate the purpose of the HRRTVP, recommendations, and benefits of transit for the region;

- Identification of strategic approaches and methods to be used in distributing these key messages (e.g., radio, television, social networking, print, public service announcement, military media channels, etc.); and
- Development of a 24-month schedule and estimated budget for a subsequent promotional and marketing campaign that could be conducted by a regional agency, aiming to achieve the highest possible exposure at the optimal cost.

The recommended strategies will require that Hampton Roads stakeholders identify and engage a regional agency/organization that can direct and implement the promotional and marketing campaign. The HRRTVP study process did not select an agency that would be tasked with the subsequent promotion of the Vision Plan and coordination of its implementation. A more detailed strategic marketing plan should be developed as a part of the promotional strategy. In addition, each corridor recommendation may require its own tailored marketing strategy to ensure Vision Plan effectiveness and regional transit success.

4.2 Future Re-evaluation of Recommendations

The project recommendations do not reflect final determinations regarding either project timing or order of implementation. The recommendations recognize that as corridor development is advanced beyond the vision phase, a full consideration of technologies, modes and alignments will be prepared in compliance with NEPA guidelines. This study provides a broad regional vision for transit and TOD and big-picture guidance for identifying priority projects. It also highlights the factors that contribute to a successful transit corridor and network. Subsequent, more detailed planning will be conducted on specific corridors of interest to the region's stakeholders.

Local governments and other stakeholders that would like to make their transit projects stronger candidates for implementation should pursue the following actions to foster transit supportive land use and urban design:

1. Coordinate with other jurisdictions to develop a comprehensive vision for transit corridors, TOD, and funding/implementation mechanisms.
2. Improve local zoning codes in transit station areas to increase densities and implement mixed-use districts in potential station areas, consider adoption of form-based codes with transit- and pedestrian-friendly urban design principles, and restrict low-density development in potential TOD locations.
3. Offer financial incentives to promote high-intensity, mixed-use, walkable development at likely station locations. Incentives may include joint development initiatives (e.g., public/private partnerships) and dedicated funding sources for transit and TOD infrastructure investments.
4. Offer non-financial incentives, such as expedited zoning approvals and density or other zoning-related bonuses.

For transit to become a truly efficient alternative to automobile travel in Hampton Roads, area leaders must make a financial and regulatory commitment to the vision. Strong transit service is critical to maintaining a high quality of life in Hampton Roads over the next several decades. However, to fulfill this vision, transit must become a regional priority today.

Technical Appendices

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Appendix A: Land Use Analysis

This appendix presents the methodology for determining potential transit corridor locations within the Hampton Roads region and the strategy for evaluating the transit and land use compatibility of each corridor. Evaluation strategies are described for rapid transit (LRT, BRT, and streetcar), commuter rail, and express/enhanced bus. More detailed description of the land use analysis methodology and detailed results for each corridor are provided in the *Transit and Land Use Compatibility Analysis* technical memorandum.

As a regional-scale vision plan, the recommended corridors are conceptual and not intended to be final corridor selections or detailed routes. Final corridors can only be determined after the completion of full, detailed studies evaluating the costs, benefits and impacts of multiple potential corridor options with significant public review and comment.

A.1 Review of Corridor Locations

A.1.1 Identification of Activity Centers and Corridors

Phase 1 identified regional activity centers based on projected employment clusters in the year 2034 using demographic projections by HRPDC. Using existing local transit studies an initial network of transit corridors was developed to connect these activity centers.

The Phase 2 project team's strategy for reviewing and revising Phase 1 corridors and identifying potential new corridors was based on the following:

1. Defining existing activity centers that can be linked by the transit service. These activity center locations were identified using several strategies:
    - Existence of mixed-use, relatively dense development within ¼ mile of the corridor;
    - Pedestrian accessibility to mixed-use development along the corridors. Parameters for determining pedestrian accessibility included no more than 300 feet from the proposed transit corridor to a retail store or restaurant, no more than ¼ mile to an office, and no more than ½ mile to a residence, with the exception of mixed-use development that incorporates all of these uses within a ½ mile.
2. Assessing the potential for future transit-oriented development (TOD) along the corridor based on TOD concepts presented in local small area or comprehensive planning documents.
3. Identifying TOD opportunity sites, which were generally large areas of potential redevelopment, such as declining industrial or strip retail centers, and some vacant properties.
4. Assessing the potential of the transit corridor to support either pedestrian infrastructure or vehicular operation within its proposed alignment.
5. Determining the existence of public rights-of-way (ROW) that could accommodate the dimensions and turning radii of the proposed transit mode. This includes rights-of way for which the public can likely gain access (e.g., railroad companies are increasingly willing to cooperate with transit agencies in sharing or selling ROW).
6. Assessing the potential to maintain simplified operations within each individual corridor and in the transit system as a whole. This includes transfers between transit modes and integration of the transit system into a multi-modal transportation network. Simplification of operations was also considered as part of the phasing strategy for the near-, long-, and extended- terms.

A.1.2 Elaboration of Initial Phase 2 Corridor Network

There are a total of 40 corridors in the Phase 2 study. The lists below indicate the corridors according to Phase 2 recommended modes: fixed-guideway transit (i.e., LRT/BRT/streetcar), commuter rail, express/enhanced bus,

high-speed ferry, and circulator bus. The Final Report Executive Summary describes the corridors in more detail and includes figures that show their locations and the overall proposed networks.

Fixed-Guideway Transit Corridors (Identified in Phase 1, refined in Phase 2)

The fixed-guideway transit corridors that were identified in Phase 1 and refined as Phase 2 recommendations include:

- **B** Christopher Newport University to Huntington Pointe
- **D** Phoebus Waterfront to Coliseum Central
- **I** Extension of The TIDE from Downtown Norfolk to Norfolk Naval Station
- **J** Extension of The TIDE from Military Highway Station to Norfolk Naval Station
- **M** Extension of The TIDE to Virginia Beach Oceanfront
- **H** Harbor Park (in downtown Norfolk) to Midtown Portsmouth to Harbour View

Fixed-Guideway Transit Corridors (new in Phase 2)

The new Phase 2 fixed-guideway corridors include the following:

- **C** Downtown Newport News to Christopher Newport University
- **E** Red Line from Downtown Newport News to Downtown Hampton
- **G** Downtown Newport News to the Norfolk Naval Station (transit-only tunnel)
- **K** Portsmouth Ferry Landing to Constitution Avenue (future extension to Harbor Park via Downtown Tunnel)
- **N** Extension of The TIDE from Military Highway Station to Greenbrier and Harbor Park (via Military Highway south, Norfolk Southern ROW, and Campostella Road)

Commuter Rail Corridors

The commuter rail corridors proposed in Phase 2 are the same as those recommended in Phase 1, with some refinements. They include:

- **A** Downtown Newport News to Lightfoot/Toano (James City County)
- **O** Harbor Park to Downtown Suffolk
- **P** Harbor Park to Fentress (possible future extension to North Carolina)

Express and Enhanced Bus Corridors

The proposed express and enhanced bus corridors largely reflect the recommendations from Phase 1, with a few adjustments and additions. The corridors include:

- **6** Harbor Park to Great Bridge via Battlefield Boulevard (commuter rail in extended term to Fentress)
- **7** I-464/Route 168, Harbor Park to Great Bridge, Chesapeake (future extension to North Carolina)
- **8a** Downtown Norfolk to Downtown Portsmouth via the Midtown Tunnel
- **8b** Harbor Park to Downtown Portsmouth to Harbour View (potential BRT in extended term)
- **8c** Harbor Park to Downtown Portsmouth to Northgate Commerce Park, via Chesapeake Square Mall
- **8d** Harbour View to Smithfield
- **8e** Downtown Portsmouth to Victory Crossing to Harbor Park via Jordan Bridge and Campostella Road
- **9a** Harbor Park to Portsmouth to Downtown Suffolk (commuter rail in extended term)
- **9b** Chesapeake Square Mall to Victory Crossing to Harbor Park
- **11** Downtown Newport News to Williamsburg (commuter rail in long term)
- **13** Downtown Newport News to downtown Hampton to Buckroe Beach

14 Gloucester County to Oyster Point
15a Oyster Point to Poquoson
15b Poquoson to Langley to Coliseum Central
17 Princess Anne Road and Lynnhaven Parkway
18 Downtown Suffolk to Bowers Hill (planned high-speed rail station) to Harbour View
19 Oceana Station (on Virginia Beach Transit Extension) to Naval Air Base
20 Downtown Hampton to Coliseum Central to Oyster Point, via Hampton Roads Center Parkway
21 Harbor Park to Cedar Lane at Deep Creek, Chesapeake (future extension to North Carolina)
22 Smithfield to downtown Newport News

Ferry Corridors

The ferry routes from the Phase 1 study have been further developed to integrate with the proposed regional transit network. The ferry routes include:

F1 Downtown Newport News to the Norfolk Naval Station and Harbor Park
F2 Downtown Hampton to the Norfolk Naval Station and Harbor Park
F3 Downtown Portsmouth to Norfolk Ferry Landing (current) to Harbor Park for connection with The TIDE (this is an extension of current service)
F4 Downtown Newport News to Harbor Park
F5 Downtown Hampton to Harbor Park
F6 Harbour View Ferry Connections: (i) to Downtown Newport News and (ii) to Downtown Hampton (new corridors in Phase 2)

Circulators

The proposed bus circulator routes will be important components of a regional system in order to link primary transit corridors with major employment centers, particularly large military facilities. For example, a circulator could connect passengers exiting/entering the rapid transit system at the Norfolk Naval Station entrance to employment locations within the base property. Security concerns and the dispersed development pattern within the bases make circulators a valuable supplemental service to the regional transit system. Circulator routes include:

23 Norview Avenue (on Corridor J) to Norfolk International Airport
24 Norfolk Naval Station entrance (on Corridors J and I) through the base property
25 Phoebus (southern end of Corridor D) around Ft. Monroe

A.1.3 Evaluation of Transit and Land Use Compatibility

The land use evaluation of each corridor recognized the fundamental interrelationship between successful transportation and land use planning. In the case of public transportation, compatible development can take many forms, depending on the transportation mode and the character of the station areas. For frequent mass transit services (e.g., LRT, BRT, or streetcar), a high-density, vertical mixed-use, pedestrian-oriented environment is critical within ¼ mile of the stations.

A.1.4 Methodology

The study evaluated the current and future compatibility of land uses within ¼ mile of the proposed LRT, BRT, streetcar, and commuter rail corridors. These evaluations were based on existing development patterns, local comprehensive and small area plans, and zoning conditions. By considering zoning, in addition to comprehensive and small area planning documents, the project team was able to gauge the feasibility of achieving an appropriate

TOD pattern along the corridor. The presence of policies favoring certain built environment characteristics in existing local government plans and zoning codes helped identify potential locations for TOD in those communities.

LRT, BRT, and Streetcar Corridors

For the identified transit corridors to be successful, each must be fully integrated into the surrounding community and easily accessible by foot, bus, and/or bike, with commuter parking facilities as appropriate. Characteristics of the existing built environment and policies within planning documents (comprehensive plans, small area plans, etc.) that signify appropriate TOD conditions include:

1. A vertical mix of uses within buildings, rather than single-use clusters separated by parking lots;
2. Relatively dense development patterns;
3. Placement of building frontages and building entrances along the rights-of-way, typically immediately behind the sidewalk;
4. Multi-story buildings that are proportional to street width;
5. Parking, when necessary, primarily located to the rear of buildings or in parking structures. In some instances, surface park-and-ride lots may be located adjacent to or near stations as an interim means for reserving land for future TOD;
6. Narrow streets configured as connected networks to accommodate, disperse, and calm traffic, and to create safer pedestrian and bicycle conditions;
7. Infrastructure to support pedestrian and bicycle accessibility to the corridor;
8. Pedestrian and vehicular connections between new and existing rights-of-way; and
9. Accommodations for street connectivity to future adjoining development.

Zoning codes that allow for and promote TOD have elements such as:

1. A clear hierarchy of pedestrian-accessible and connected streets with clearly designated required building lines (RBL) and block sizes to best support pedestrian access. For example, a range for block sizes could fall between 1,000 to 1,700 linear feet, as measured at the RBL;
2. A minimum requirement for how much of the RBL will be fronted by buildings, which could fall within the range of 50 to 80 percent;
3. Encouragement of, or requirements for, vertical mixed-use buildings;
4. Standards for how vertical mixed-use buildings would engage the RBL, which could address building entrance spacing and a minimum percentage of ground floor windows, functional doors, and other fenestration;
5. Requirements for ground floor shop-front retail or office space for buildings facing a rail station platform, which could be located within a suggested 500-foot walking distance of the platform;
6. Flexibility for upper-floor uses, which typically include residential or office space; and
7. A suggested minimum building height of four floors for buildings facing a transit station.

An important consideration in evaluating the zoning codes was recognition that mixed-use zoning requirements do not necessarily offer proper guidance for building design and placement. Without this guidance, a mixed-use development could result in separated uses without appropriate pedestrian connectivity or development patterns supportive of rapid transit (e.g., adequate densities near transit stops).

Commuter Rail Corridors

The evaluation of land use compatibility for the commuter rail corridors is similar to that for LRT, BRT, and streetcar; however, due to the differences in service characteristics, commuter rail stations can adapt to a range of development patterns while successfully supporting the public transportation service. Some commuter rail stations may function best, in either the short- or long-term, as park-and-ride locations. Other stations may offer a

combination of parking and medium-density, walkable development. Still others may resemble the characteristics of a rapid transit station, as described in the previous section.

The locations of these various station types, however, are important. Park-and-ride stations should be located at the ends of commuter rail corridors or at strategic mid-corridor locations. Center city commuter rail stations should be supported by higher-density, pedestrian-oriented, vertical mixed-use environments. Suburban and small town stations should also promote walkable station area development, consistent with the scale and long-term vision of the area.

Express and Enhanced Bus Corridors

Express bus service typically connects a park-and-ride facility in a suburban or other outlying area to a high-demand destination, such as a city center business district or employment center. These corridors frequently operate on major roadways, often within high-occupancy-vehicle (HOV) lanes. The suburban and small town communities from which the express bus services originate should consider locating surface park-and-ride facilities away from downtown areas, where large surface parking facilities are not appropriate. Existing oversized parking lots at shopping centers in auto-oriented districts, for example, could be opportunity sites for express bus park-and-ride. Over time, these parking lots could develop into mixed-use centers accommodating shared parking between residential and park-and-ride uses, and structured parking facilities. Although surface park-and-ride facilities are not typically appropriate in older downtowns, the jurisdiction could consider a second pick-up location (non-park-and-ride) in the downtown or another central location in the community.

Enhanced bus services are similar to mixed-traffic local bus services, however the former offer improved travel times by limiting the number of stops. Enhanced bus services do not typically require special parking facilities. Another method for improving travel times for enhanced bus and other types of bus services is provision of bus signal priority and intersection queue jump lanes. Both of these strategies allow the buses to move ahead of other traffic and, therefore, improve speed and efficiency of the service.

Express and enhanced bus transit services both would benefit from TOD patterns; however, these modes are sometimes used when rapid transit is not an option due to the lack of density and/or lack of a TOD pattern in an area.

High-Speed Ferry Corridors

For ferry service to be a competitive alternative to auto travel across the region's water bodies, it must offer a convenient way for riders to access their destinations. This objective could be accomplished with park-and-ride facilities (on one end) and frequent bus pick-up (on the other end) in the near-term. However, in the long- and extended-terms, truly competitive ferry service should have landing area land uses similar to those described for LRT, BRT, and streetcar. The ferries will also connect with major transfer centers to allow easy and quick transfers to regional rail and bus transit corridors. The transfers between corridors and modes must be convenient for the system to be an efficient alternative to auto travel. At the Naval Station North ferry landing, for example, a circulator bus (Corridor 24) could link the ferry landing to the Norfolk Naval Station LRT station and other destinations within the base.

Historically, ferry service in Hampton Roads has had limited ability to compete with auto travel due to the no-wake regulations around downtown Norfolk and downtown Hampton. The no-wake rules require ferries to significantly reduce speed and therefore make travel time between the Peninsula and the Southside slower than auto travel in the bridge/tunnels. Vessel choice/technology is an important factor in making the ferry services successful given these no-wake restrictions.

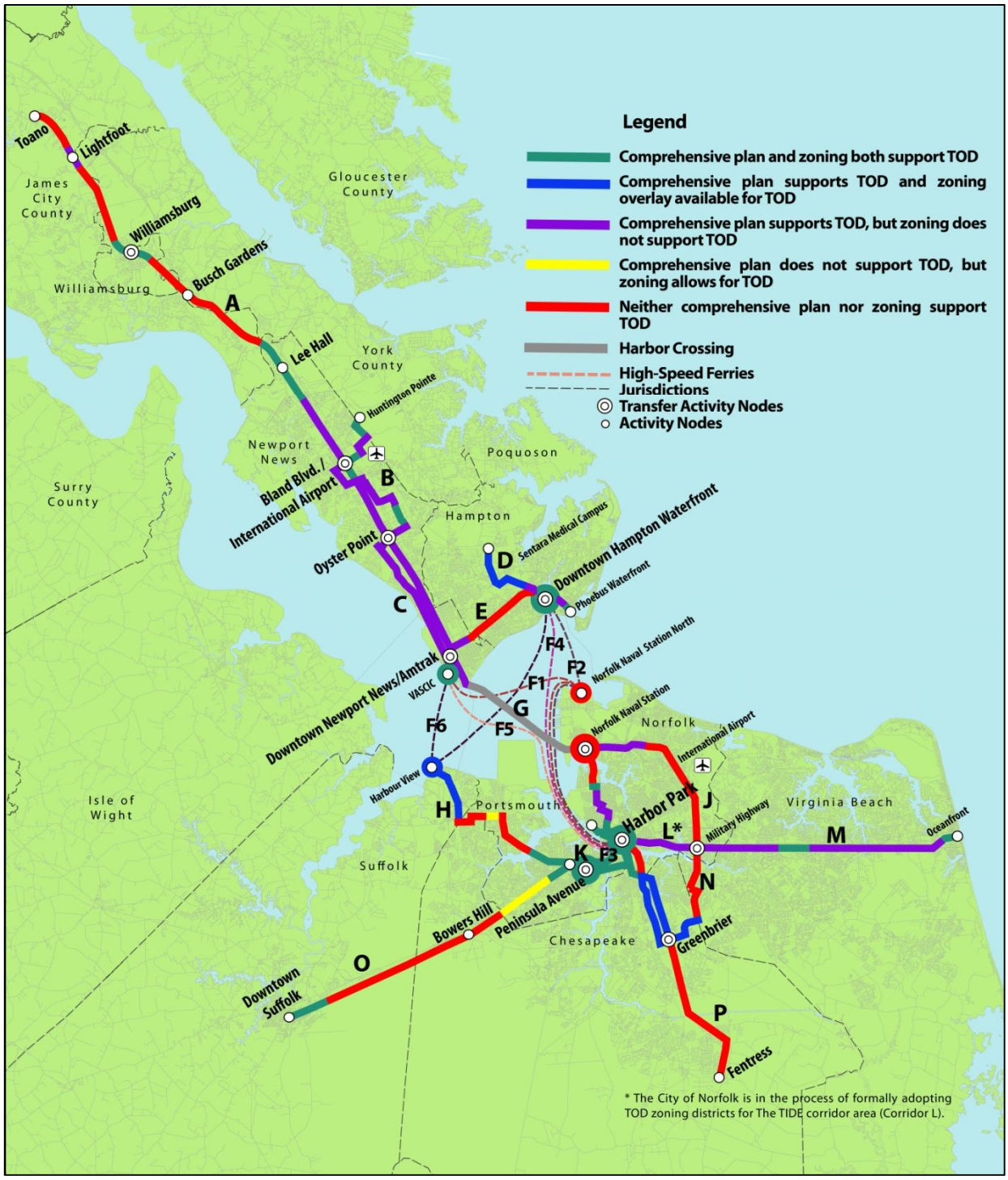
A.2 Results

Figure A-1 shows the results of the land use analysis along each of the proposed fixed-guideway and commuter rail corridors. Segments of each corridor were rated according to the degree to which the comprehensive plan and zoning regulations of each district supported TOD. The ratings used were as follows:

- Comprehensive plan and zoning both support TOD
- Comprehensive plan supports TOD and zoning overlay available for TOD
- Comprehensive plan supports TOD, but zoning does not support TOD
- Comprehensive plan does not support TOD, but zoning allows for TOD
- Neither comprehensive plan nor zoning support TOD

Detailed evaluations of each of the local government comprehensive plans and zoning ordinances along the proposed transit corridors are described in the *Transit and Land Use Compatibility Analysis* technical memorandum.

Figure A-1: Land Use Planning Suitability



Appendix B: Capital Cost Estimation

This appendix summarizes the capital cost estimation methodology and results. The analysis provided an estimate of the likely capital cost of constructing this new infrastructure, using a new methodology developed specifically for the Vision Plan. This new methodology improves upon the prior (Phase 1, May 2009) capital cost estimate in a number of ways, and is applied to a revised set of projects developed in Phase 2 of the Vision Plan. The detailed methodology and results are presented in the *Review of Capital Cost Estimation Methodology* technical memorandum.

B.1 Methodology

The capital cost estimation analysis consisted of the following tasks:

- Description of how capital costs were estimated in the prior (May 2009) report;
- Summary of potential limitations and improvements to the prior work;
- Elaboration of a new methodology for estimating capital costs that reflects industry experience and accommodates the limited amount of information known about each project; and
- Application of the revised methodology to the recommended Vision Plan projects.

The following points should be noted regarding the estimates:

The Cost Estimates Do Not Include Operation and Maintenance Expenses – Supporting new transit services in the region depends on operating and maintenance funding as well as capital funding. Operation and maintenance expenses will be estimated in future phases of the vision and corridor planning processes beyond Phase 2 when proposed projects are further defined.

All Cost Estimates are Presented in 2009 Dollars – For comparison purposes, all the estimates in this report are shown in 2009 dollars. As a result, an average 3-5% annual rate of increase should be added to project cost ranges to estimate future year-of-expenditure costs.

B.1.1 Funding of Regional Transit Services

Any decisions to support new transit projects in the Hampton Roads region of Virginia, either through capital funding or operations, are subject to the policies and direction of the area's transit providers and local government jurisdictions.

HRT

HRT is the regional provider of public transportation and is the operating arm of the Transportation District Commission of Hampton Roads (TDCHR). The TDCHR sets policy for the agency and consists of two appointed members from each city, a representative from DRPT and two members from the Virginia General Assembly. HRT provides transit services within the cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, Suffolk and Virginia Beach. HRT has an annual budget of nearly $83 million and is funded by the localities of Hampton Roads, the Commonwealth of Virginia, FTA, and fares from its riders. The agency operates as a proprietary fund, accounting for revenues and expenditures on an accrual basis in the annual financial report. However, like its member cities, HRT prepares its budget on a cash basis. Capital improvement outlays are budgeted in a Grant Funding budget separate from the operating budget. The TIDE is accounted for separately because this project does not impact all municipal partners. To support operating expenses, HRT's local government partners are asked to "pay at the margin" – i.e., to contribute funds necessary beyond what is otherwise available from farebox revenues, advertising revenues, federal and state grants and operating assistance, and various miscellaneous resources.

WATA

WATA represents the public transit interests of the City of Williamsburg, the Colonial Williamsburg Foundation (CWF) and Counties of James City and York. The WATA Board sets policy for the Authority and is composed of the following members: two Directors from James City County and one Director each from the City of Williamsburg, York County and Colonial Williamsburg Foundation. In addition, representatives from DRPT and the College of William and Mary are advisory members. WATA has an annual operating budget of $8 million and is funded by the City of Williamsburg, James City County, York County, the Commonwealth of Virginia, the FTA, and fares from its riders. The agency oversees revenues and expenditures on an accrual basis. However, like its member jurisdictions, WATA prepares its budget on a cash basis. Capital improvement outlays are budgeted on a year to year basis separate from the operating budget. To support operating expenses, WATA local government partners are asked to "pay at the margin" – i.e., to contribute funds necessary beyond what is available from farebox revenues, federal and state grants and operating assistance.

Hampton Roads Transportation Planning Organization (HRTPO)

HRTPO is the designated Metropolitan Planning Organization for the region, certified by the federal government to receive federal aid for transportation projects. HRTPO prepares and approves the regional Long-Range Transportation Plan (LRTP) and the Transportation Improvement Program (TIP), which is the priority list of transportation capital projects for the current and next several years. Voting representation on the HRTPO Board includes elected officials from the Cities of Chesapeake, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg, and the Counties of Gloucester, Isle of Wight, James City, and York; plus representatives from TDCHR, WATA, and the VDOT. Non-voting board members include representatives from DRPT, the Virginia Port Authority (VPA), the Virginia Department of Aviation (VDOA), the Federal Highway Administration (FHWA), FTA, and the Federal Aviation Administration (FAA).

B.1.2 Prior Estimation of Capital Costs

The Phase 1 capital cost methodology used two to three pieces of data about each corridor (length in miles and quantities of park-and-ride lots, docks, and vehicles) to estimate capital costs for all transit construction projects called for in the original Phase 1 Plan. Most rail projects, which account for the majority of the capital costs of the Vision Plan, were estimated using one average capital cost per mile. This average cost per mile was developed based on a handful of peer projects.

B.1.3 New Methodology to Estimate Capital Costs

The analysis developed a new methodology to estimate HRRTVP capital costs using the following objectives:

- Replace the prior single point estimates with cost ranges, reflecting:
  - Actual expenses incurred in the transit industry for a variety of projects similar to those likely for the Hampton Roads region, and
  - The conceptual level of project definition at this point;
- Assemble as wide a variety of a peer public transit projects as possible to reflect the potential range of experience in public transit capital costs;
- Be flexible enough to accommodate a range of project characteristics depending on stakeholder input;
- Leverage all data available about the complexity and scope of each Vision Plan project, including new data generated to support the new ridership forecast, and estimate the effect on capital costs; and
- Capture network effects, recognizing the potential for shared facilities.

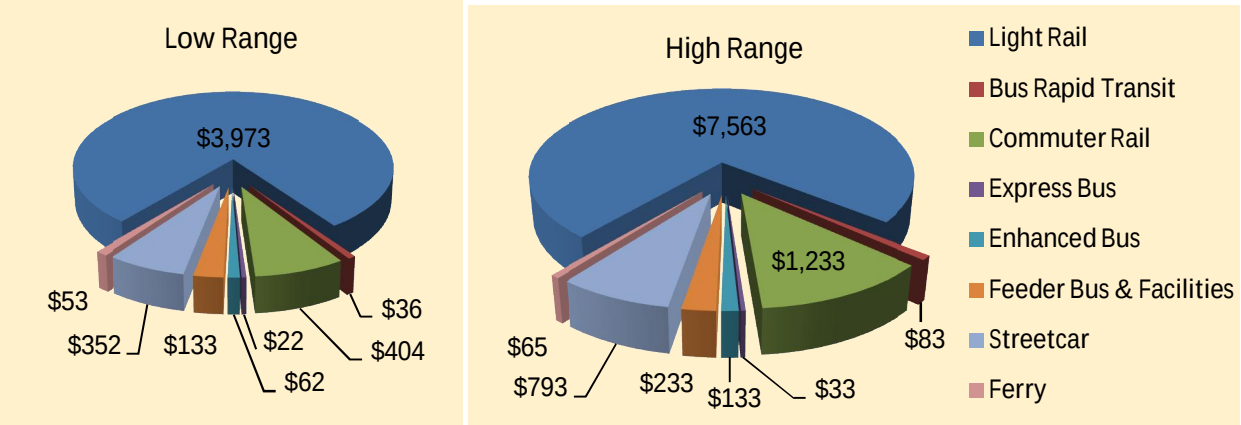
To estimate capital costs for light rail projects, the single biggest element of cost in the Vision Plan, this methodology relied on regression analysis of the FTA's Light Rail Capital Cost Database of as-built costs of approximately 30 light rail construction projects in the U.S. since the 1970s. For other modes, the methodology

assembles cost data on a group of projects similar to those suggested in the Vision Plan, and establishes a range by adding and subtracting one standard deviation from the sample mean. A standard deviation is a statistical measure of the degree to which the cost data are dispersed. Because of this result, the ranges of capital cost shown are directly related to the bulk of the transit industry's experience. If the industry experience with cost has been more mixed, this methodology will show a wider range, and if industry experience has been more predictable and less dispersed, this methodology will show a narrower range.

B.2 Results

The costs of projects are expressed as ranges in 2009 dollars based on the new methodology. Note that these revised estimates exclude the capital cost for The TIDE Light Rail and the extension of The TIDE to Virginia Beach that is currently under study. Figure B-1 summarizes these results.

Figure B-1: Vision Plan Capital Costs (2009$, millions) by Mode



Note that some proposed projects have been modified during the Phase 2 planning process and are different from the corresponding Phase 1 projects in terms of recommended route, timeframe of implementation, or mode. As a result, direct comparisons of Phase 1 and Phase 2 capital cost estimates for individual projects would need to take these differences into account.

Table B-1 on the following page summarizes the capital cost estimates presented as ranges.

Table B-1: Capital Cost Estimates

Corridor/Service	Mode	Corridor Length (miles, one-way)	Capital Cost Estimate (2009$, millions)	
			Low	High
New Transit Corridors				
A: Downtown Newport News to Lightfoot*	Com Rail	30.8	$ 200.8	$ 612.0
B: Christopher Newport University to Huntington Pointe**	LRT	9.5	**	**
C: Downtown Newport News to Christopher Newport University	LRT	7.6	$ 343.0	$ 582.2
D: Phoebus Waterfront to Coliseum Central	Streetcar	6.0	$ 185.2	$ 417.6
E: Downtown Newport News to Downtown Hampton	LRT	5.8	$ 261.2	$ 443.5
F1: Downtown Newport News to Norfolk Naval Station to Harbor Park	Ferry	22.0	$ 9.0	$ 11.0
F2: Downtown Hampton to Norfolk Naval Station and Harbor Park	Ferry	17.5	$ 10.3	$ 12.3
F3: Downtown Portsmouth to Downtown Norfolk	Ferry	1.0	$ 6.6	$ 8.6
F4: Downtown Newport News to Harbor Park	Ferry	28.5	$ 10.3	$ 12.3
F5: Downtown Hampton to Harbor Park	Ferry	28.5	$ 9.0	$ 11.0
F6: Harbour View Ferry Connections to Hampton and Newport News	Ferry	15.0	$ 7.9	$ 9.9
G: Downtown Newport News to Norfolk Naval Station	LRT-only tunnel	8.5	$1,562.0	$ 3,590.2
H: Harbor Park to Midtown Portsmouth to Harbour View	BRT	9.9	$ 36.1	$ 83.1
I: TIDE Extension from Downtown Norfolk to Norfolk Naval Station	LRT	4.5	$ 264.5	$ 462.7
J: TIDE Extension from Military Hwy Station to Norfolk Naval Station	LRT	9.2	$ 411.9	$ 696.0
K: Portsmouth Ferry Landing to Constitution Ave.	Streetcar	5.4	$ 166.7	$ 375.9
M: TIDE Extension to Virginia Beach***	Rapid Transit	***	***	***
N: TIDE Extension from Military Hwy Station to Greenbrier and Harbor Park	LRT	11.5	$ 705.5	$ 1,068.7
O: Harbor Park to Downtown Suffolk	Com Rail	18.6	$ 121.4	$ 370.2
P: Harbor Park to Fentress	Com Rail	12.5	$ 82.0	$ 250.7
6: Harbor Park to Great Bridge	Exp Bus	10.3	$ 1.5	$ 2.3
7: Harbor Park to Great Bridge via I-464/Rte 168	Exp Bus	10.5	$ 1.5	$ 2.3
8a: Norfolk Hospital to Portsmouth via Midtown Tunnel	Enh Bus	3.2	$ 2.1	$ 4.4
8b: Harbor Park to Harbour View	Enh Bus	12.0	$ 7.1	$ 15.3
8c: Harbor Park to Downtown Portsmouth to Northgate Commerce Park	Exp Bus	13.6	$ 1.5	$ 2.3
8d: Harbour View to Smithfield	Exp Bus	19.5	$ 2.0	$ 3.1
8e: Portsmouth to Victory Crossing to Harbor Park	Enh Bus	16.2	$ 9.1	$ 20.0
9a: Harbor Park to Downtown Suffolk	Exp Bus	19.4	$ 2.0	$ 3.1
9b: Harbor Park to Downtown Portsmouth to Chesapeake Square Mall	Exp Bus	9.2	$ 1.5	$ 2.3
11: Downtown Newport News to Williamsburg	Exp Bus	30.8	$ 3.1	$ 4.8
13: Downtown Newport News to Hampton/Buckroe Beach	Exp Bus	9.7	$ 1.5	$ 2.3
14: Gloucester County to Oyster Point	Exp Bus	26.0	$ 2.5	$ 4.0
15a: Oyster Point to Poquoson	Exp Bus	10.7	$ 1.5	$ 2.3
15b: Poquoson to Langley to Coliseum to Hampton Waterfront	Exp Bus	13.0	$ 1.5	$ 2.3
17: Princess Anne Road and Lynnhaven Pkwy	Enh Bus	17.0	$ 9.8	$ 21.2
18: Downtown Suffolk to Bowers Hill to Harbour View	Enh Bus	14.1	$ 8.1	$ 17.6
19: Oceana Station to Naval Air Base	Enh Bus	10.0	$ 6.1	$ 13.0
20: Downtown Hampton to Coliseum Central to Oyster Pt.	Enh Bus	13.4	$ 7.9	$ 17.1

Corridor/Service	Mode	Corridor Length (miles, one-way)	Capital Cost Estimate (2009$, millions)	
			Low	High
21: Downtown Norfolk to Deep Creek (Cedar Road)	Exp Bus	10.1	$ 1.5	$ 2.3
22: Smithfield to Downtown Newport News	Enh Bus	17.5	$ 10.6	$ 25.0
Supporting Bus Service				
Bus Facility Needs for Existing Virginia Beach Service	Local Bus	-	$ 5.3	$ 11.2
Bus Facility Needs for Virginia Beach Service Expansion	Local Bus	-	$ 9.5	$ 20.2
Bus Facility Needs for Other South Side Service Expansion	Local Bus	-	$ 26.5	$ 56.1
Bus Facility Needs for Peninsula Side Service Expansion	Local Bus	-	$ 14.5	$ 30.6
Additional Buses for Short-Term (incl. replacement)	Local Bus	-	$ 5.9	$ 8.7
Additional Buses for Near-Term (incl. replacement)	Local Bus	-	$ 72.5	$ 108.3
Additional Buses for Long-Term (incl. replacement)	Local Bus	-	$ 30.4	$ 45.4
Additional Buses for Extended (incl. replacement)	Local Bus	-	$ 8.6	$ 12.8

* The segment from Lightfoot to Toano was added to Corridor A late in the study and was not included in the capital cost estimate.
** Two capital cost estimates using two different methodologies have been prepared for the proposed LRT corridor between Christopher Newport University and Huntington Pointe. The *Peninsula Rapid Transit Study* estimated the capital cost for this corridor at $251 million (in 2008 dollars). The *Hampton Roads Regional Transit Vision Plan* Phase 2 estimated a capital cost range of $425-720 million (in 2009 dollars).
*** Corridor M was not included in this capital cost analysis, because the project is currently in FTA's Alternatives Analysis/Environmental Process. Separate capital cost estimates are being prepared for the alternatives under study as part of the FTA process.

Appendix C: Ridership Forecasts

This appendix summarizes the ridership forecasting methodology and results. The analysis provided order-of-magnitude estimates of transit ridership for the horizon year of 2034 for the recommended corridors. The detailed methodology and results are presented in the *Ridership Forecasting Methodology and Results* technical memorandum.

C.1 Methodology

C.1.1 Prior Ridership Forecasts

Ridership forecasts for the majority of the transit projects included in this study were prepared previously for the HRRTVP Phase 1 Study. The Phase 1 methodology was a spreadsheet-based analysis in which estimated transit mode shares were applied to the total 2034 district-to-district person trips in each of the study corridors. The results of the Phase 1 ridership forecasts were generally much higher than would be expected based on experience in other U.S. cities. For this reason, a new forecast methodology was used in the Phase 2 ridership analysis.

C.1.2 Updated Methodology for Ridership Forecasts

The new ridership forecast methodology resulted in estimates that were more easily reconciled with experiences of transit projects in U.S. regions with demographic characteristics similar to those of Hampton Roads.

Key changes to the methodology were:

- New approach for LRT and Commuter Rail corridor forecasts;
  - Use of FTA's Aggregate Rail Ridership Forecasting (ARRF) Model;
- Modified spreadsheet-based approach for bus corridors;
  - Revised mode shares and fewer "Primary Attraction Districts";
- Smaller forecast range (+/- 25%); and
- Different bus types for some corridors.

Ridership forecasts for the HRRTVP Phase 2 corridors were prepared using two different methodologies, one for rail and ferry corridors and the other for bus corridors. Rail and ferry ridership were forecast using the FTA ARRF Model version 2.0. Bus ridership was forecast using a similar spreadsheet-based methodology as the one employed in Phase 1 but with some refinements to the model inputs. Forecast results represent each corridor individually and do not reflect a potential network effect.

Although recommended timeframes for implementation of the corridors vary, the forecast results are presented for the single horizon year of 2034 for the purpose of providing a single point of comparison among corridors. Thus, for example, corridors or segments of corridors that are recommended for implementation in the extended term (after 2035, which is beyond the forecast year), were assumed in the ridership analysis to be in operation along their entire length by the 2034 horizon year. Corridors with different implantation timeframes for different segments (e.g., Corridors A and N) were assessed as single complete corridors.

C.1.3 Rail and Ferry Corridor Ridership Forecasting Methodology - FTA ARRF Model

ARRF Model Overview

The ARRF Model is a GIS- and spreadsheet-based tool developed by AECOM for the FTA to make order-of-magnitude estimates of ridership for new rail lines in areas where there are no existing fixed guideway transit facilities. The model gives an indication of ridership potential without investing all the resources necessary for a full regional model ridership analysis. It does not take the place of appropriate forecasts later in the corridor planning process which are developed using a regional travel demand model (such as those used for the FTA New Starts program), rather it provides guidance in a broad study context such as the HRRTVP.

The ARRF model is calibrated using the experiences of other cities in the U.S. that have implemented new transit corridors. Cities that have implemented LRT systems and are included in the ARRF model include:

- Baltimore;
- Buffalo;
- Cleveland;
- Dallas;
- Denver;
- Portland;
- Sacramento;
- Salt Lake City;
- San Diego;
- San Jose; and
- St. Louis.

Commuter Rail systems used in the model include:

- Maryland Area Regional Commuter (MARC) – suburban Maryland, Washington DC and Baltimore;
- Virginia Railway Express (VRE) – Northern Virginia and Washington, DC;
- Caltrain – San Francisco and San Jose, CA; and
- Sounder – Seattle and Tacoma, WA.

The ARRF Model is intended primarily for ridership forecasts for rail transit schemes, but the model has been used before for a ferry project in the HRT Waterborne Transit Study, in December 2009.

The model estimates total unlinked rail transit trips (i.e., trips on a single vehicle from origin to destination or a single segment without transfers) for light rail and commuter rail systems by applying a series of expected rail mode shares to the amount of total (all modes) travel to work trips occurring within a specified distance of a potential rail alignment, as recorded in the Year 2000 Census. Ridership is adjusted up or down to account for the level-of-service (speed and frequency) of the modeled rail line as compared to the averages for the rail lines used to calibrate the model. For the HRRTVP, the ARRF Model inputs were also calibrated with the results of the comprehensive ridership forecast performed by HRT for The TIDE project.

Key inputs to the ARRF Model are population and employment within set distances of each potential station location and service planning information such as the number of services (i.e. train trips) per day, the length of the line, and the speed of the service. The HRT/HRTPO travel demand model, which has been used previously to prepare ridership forecasts for a number of potential transit improvements, including the Peninsula Rapid Transit

Project (PRTP), has a base year of 2000 and a forecast year of 2034. Trip matrices from this model have been used to determine 2000 to 2034 growth factors for each of the HRRTVP Phase 2 corridors.

Other key inputs to the ARRF Model are potential station locations, potential park-and-ride facilities, the length of the rail line, average speed of the service, and the number of trains (or ferries) per day per direction. These level-of-service characteristics were estimated based on an analysis of average speeds and numbers of trains per day at other LRT and commuter rail systems around the country similar to the Hampton Roads region. The potential station and park-and-ride facility locations were selected for ridership forecasting purposes only; the recommendations of the HRRTVP do not include station locations along the corridors.

ARRF Model Limitations

The ARRF Model is designed as a "sketch planning" tool to provide order-of-magnitude estimates for rail transit projects. The model does not provide detailed ridership data such as station boardings, mode of access data or passenger miles traveled.

The following considerations should be noted about the application of the model for the HRRTVP Phase 2 transit corridors:

- Each corridor has been modeled in isolation from the others so the potential for riders to make a trip using two or more adjacent lines (should they all be constructed) is not represented in the forecasts; and
- The ARRF Model does not explicitly include other nearby or connecting transit lines so the presence of a competing transit service may reduce the actual ridership. A specific example of this is Corridor N which connects Military Highway and Harbor Park via Greenbrier to the south. Military Highway and Harbor Park will also be connected by The TIDE Light Rail Line, which will offer a direct east-west trip between these locations, which could reduce Corridor N ridership.

The ARRF model was used to produce ridership forecasts for eleven rail corridors and six ferry corridors. The following rail corridors were excluded from the analysis:

- **Corridor M** – The proposed extension of The TIDE through Virginia Beach is not included in this ridership analysis, because the project is currently in FTA's Alternatives Analysis/Environmental Process. Separate ridership estimates are being prepared for the alternatives under study as part of the FTA process.
- **Rail Harbor Crossing Corridors** – The Corridor G LRT-only tunnel from Newport News to Norfolk Naval Station was not included in this analysis because it acts as a connector between other corridors on either side of Hampton Roads, rather than as a stand-alone corridor. The ridership for this corridor, as determined using the methodology described above, would be underestimated, because only the trips between the immediate areas on either side of the connector would be considered, rather than the greater volumes of trips that are produced/attracted by the corridors being joined by the Corridor G connector.

C.1.4 Bus Corridor Ridership Forecasting Methodology

For the bus corridors (enhanced bus, express bus and BRT), district-level mode shares were applied to district-to-district mode shares. The mode share applied was based on whether a district was considered a "Primary" or "Secondary Attraction District". A "Primary Attraction District" would have a significantly higher employment density and would therefore attract large numbers of work and other types of trips. Only Downtown Norfolk has been defined as a Primary Attraction District; all other districts are defined as Secondary Attraction Districts due to their lower employment densities, walkability, parking costs, traffic congestion, historic transit ridership and other

related factors. In addition, the BRT mode shares reflect the mode's position between express bus and LRT and reflect national experience to date.

C.2 Results

The results are presented as base ridership forecasts for the year 2034, assuming that population and employment growth in the study area is the same as that included in HRTPO's demographic forecasts. Average weekday ridership forecasts are shown in Table C-1.

The base forecasts were then expanded to a range by increasing each forecast number by 25% to determine a high level of ridership and by decreasing the forecast by 25% to determine a low level of ridership. The +25% scenario is intended to represent the additional ridership that may result from higher levels of transit-supportive land uses, policies, and programs, as well as (in the case of the fixed-guideway forecasts) higher acceptance of the new modes than in the cities used in ARRF model development. The -25% scenario represents ridership that may result from lower than expected levels of population and employment growth in the transit station areas/ corridors or from less acceptance of the new mode than in the ARRF cities.

Table C-1: Phase 2 2034 Average Weekday Ridership Forecasts

Corridor Number and Description	Low	Med	High
Fixed Guideway Corridors – LRT, Streetcar, Ferry, and Commuter Rail			
Commuter Rail Corridor A: Downtown Newport News to Lightfoot*	2,200	3,000	3,700
Light Rail Corridor B: Christopher Newport University to Huntington Pointe	3,400	4,500	5,600
Light Rail Corridor C: Downtown Newport News to Christopher Newport University	2,100	2,800	3,500
Streetcar Corridor D: Phoebus Waterfront to Coliseum Central	1,500	2,000	2,500
Light Rail Corridor E: Downtown Newport News to Downtown Hampton	1,900	2,500	3,100
Ferry Crossing F1: Downtown Newport News to Norfolk Naval Station to Harbor Park	500	600	800
Ferry Crossing F2: Downtown Hampton to Norfolk Naval Station to Harbor Park	600	800	1,100
Ferry Crossing F3: Downtown Portsmouth to Downtown Norfolk	300	400	500
Ferry Crossing F4: Downtown Newport News to Harbor Park	100	100	100
Ferry Crossing F5: Downtown Hampton to Harbor Park	100	200	200
Ferry Crossing F6: Harbour View Ferry Connections (to Downtown Newport News and Downtown Hampton)	100	100	100
Light Rail Corridor G: LRT-Only Tunnel from Downtown Newport News to Norfolk Naval Station**	**	**	**
Light Rail Corridor I: TIDE Extension from Downtown Norfolk to Norfolk Naval Station	1,600	2,200	2,700
Light Rail Corridor J: TIDE Extension from Military Highway Station to Norfolk Naval Station	3,400	4,500	5,700
Streetcar Corridor K: Portsmouth Ferry Landing to Constitution Ave (future connection to Harbor Park)	800	1,100	1,400
Rapid Transit Corridor M: TIDE Extension to Virginia Beach***	***	***	***

Corridor Number and Description	Low	Med	High
Light Rail Corridor N: TIDE Extension from Military Hwy Station to Greenbrier and Harbor Park	3,900	5,200	6,500
Commuter Rail Corridor O: Harbor Park to Downtown Suffolk	600	800	1,000
Commuter Rail Corridor P: Harbor Park to Fentress	1,000	1,300	1,600
BRT, Express Bus and Enhanced Bus Corridors			
Bus Rapid Transit Corridor H: Harbor Park to Midtown Portsmouth to Harbour View	800	1,100	1,400
Express Bus Corridor 7: Harbor Park to Great Bridge (via I-464/Route168)	100	200	200
Enhanced Bus Corridor 8a: Norfolk Hospital to Downtown Portsmouth via Midtown Tunnel	200	300	400
Express Bus Corridor 8c: Harbor Park to Downtown Portsmouth to Northgate Commerce Park	400	500	600
Express Bus Corridor 8d: Harbour View to Smithfield	100	100	200
Enhanced Bus Corridor 8e: Downtown Portsmouth to Victory Crossing to Harbor Park	700	900	1,100
Express Bus Corridor 9b: Harbor Park to Downtown Portsmouth to Chesapeake Square Mall	100	200	200
Enhanced Bus Corridor 13: Downtown Newport News to Hampton/ Buckroe Beach	600	800	900
Express Bus Corridor 14: Gloucester County to Oyster Point	25	25	25
Enhanced Bus Corridor 15a: Oyster Point to Poquoson	25	25	25
Enhanced Bus Corridor 15b: Poquoson to Langley to Coliseum Central	25	25	25
Enhanced Bus Corridor 17: Princess Anne Road and Lynnhaven Pkwy	1,100	1,400	1,800
Express Bus Corridor 18: Downtown Suffolk to Bowers Hill to Harbour View	500	700	800
Enhanced Bus Corridor 19: Oceana Station to Naval Air Base	200	200	300
Enhanced Bus Corridor 20: Downtown Hampton to Coliseum Central to Oyster Point	600	1200	1800
Express Bus Corridor 21: Downtown Norfolk to Deep Creek (Cedar Road)	100	200	200
Enhanced Bus Corridor 22: Smithfield to Downtown Newport News	200	200	300

* The segment from Lightfoot to Toano was added to Corridor A late in the study and was not included in the ridership analysis.
** Corridor G was not included in this ridership analysis, because it acts as a connector between other corridors on either side of Hampton Roads, rather than as a stand-alone corridor. The ridership for this corridor, as determined using the methodology described above, would be underestimated, because only the trips between the immediate areas on either side of the connector would be considered, rather than the greater volumes of trips that are produced/attracted by the much larger corridors being joined by the connector.
*** Corridor M was not included in this ridership analysis, because the project is currently in FTA's Alternatives Analysis/Environmental Process. Separate ridership estimates are being prepared for the alternatives under study as part of the FTA process.

Appendix D: Market Analysis

This appendix summarizes the market analysis performed for the fixed guideway rail and BRT corridors. The detailed methodology and results are presented in the *Economic Projections for Proposed Transit Corridors* technical memorandum.

D.1 Methodology

D.1.1 Types of Market Impacts

The economic development impacts that would result from the implementation and operation of the LRT, BRT, streetcar, and commuter rail projects in the HRRTVP fall into the following categories:

- Increase in new commercial and residential development within a ¼ mile of the LRT, BRT, and streetcar project corridors that would be attributable solely to the transit investment;
- Increase in new commercial and residential development within a ¼ mile of the commuter rail station areas that would be attributable solely to the commuter rail service;
- Economic multiplier effects (direct plus indirect and induced) of new commercial and residential development construction; and
- Property tax base changes associated with the new development.

The extent of the economic impacts would change over time. The expanded regional transit system likely would cause structural changes in the regional economy and, thereby, alter the competitive status of the region to attract greater economic development and redevelopment. Typically, this growth includes commercial, specialized retail/service uses, and higher-density residential development that often accompany transportation investments and changes in land use policies that focus growth. This development and redevelopment activity acts to capture the economic benefits from high-density development, which is accommodated by high-quality transit service.

D.1.2 New Regional Development versus Shifts in Development within the Region

For this analysis, it is important to note that "new" development refers to development that comes from outside the Hampton Roads region. It does not include any development that moves from one location in the Hampton Roads region to another location in the region. For example, development that would have occurred in Norfolk, but moves to Newport News is not considered new for this analysis. While the City of Newport News may view this development as new, it is not new from the perspective of the region, because Norfolk would lose this development. This distinction is an important component of HRRTVP, because it is a regional study that focuses on maximizing the benefits from transit investment for the entire region, not individual jurisdictions.

While development that shifts from one jurisdiction to another within the Hampton Roads region is an important consideration for each of the cities, this level of analysis is not feasible at such an early stage in the planning process. This type of market analysis is more appropriate during individual corridor planning studies, because more detailed data on exact alignments and station locations are required to have an understanding of the amount and type of development that would shift to the transit corridors and from which jurisdictions.

For the purpose of the Vision Plan, the estimated order of magnitude for the development impacts is adequately captured using the new regional development analysis applied in the HRRTVP. This approach highlights which transit corridors would have the greatest potential to attract new development and redevelopment opportunities in each implementation term of the Vision Plan. Transit corridors that are most attractive for new development (from outside the region) are also likely to be the most desirable for development that shifts from within the Hampton Roads region.

D.2 Results

D.2.1 Development Volume Projections

The economic impacts described above result from the projections of the corridor development scenarios. Totaled together, the development scenarios result in an additional increment of approximately 1.6 million square feet of new commercial development and 1.7 million square feet of new residential development that would occur within ¼ mile of the LRT, BRT, streetcar, and commuter rail transit corridors. It is important to note that these estimates only include the new development and redevelopment from outside the Hampton Roads region that would be attributable solely to the HRRTVP transit projects. They do not include the development already planned for the corridors (as accounted for in the 2007 HRPDC forecasts of population and employment) or additional development that would move to the corridors from elsewhere within the Hampton Roads region.

In terms of reasonableness, by 2050 the proposed HRRTVP LRT, BRT, streetcar, and commuter rail investments would generate an approximately 3.5 percent increase over the current amount of commercial office development in the region. Similarly, by 2050 the construction of residential units that would be attributable to the proposed LRT, BRT, streetcar, and commuter rail investments would represent a 0.2 percent increase over the total dwelling units currently estimated for the Hampton Roads region.

While these estimates may seem modest, they are the "net new" estimates of growth that would not have occurred but for the project. It is also important to note that these estimates do not capture increases in value to the existing commercial and residential building stock, nor do they capture the benefits of more focused growth accommodated by the realization of the Vision Plan.

Table D-1 summarizes the projected additional development increments of new growth to the region within ¼ mile[3] of the corridors (for LRT, BRT and streetcar modes) or within ¼ mile of commuter rail potential station locations.[4] Because the exact distribution of the development in each Transportation Analysis Zone (TAZ) is not known, the analysis also considered the impacts of the corridors on the entire areas of TAZs within ¼ mile of the proposed alignments.[5] This analysis was not possible for the commuter rail analyses, because those corridor analyses only considered the impacts associated with station areas, not the full lengths of the transit corridors. Table D-2 summarizes the projected additional development increments across the entire TAZs within ¼ mile of the corridors.

[3] The ¼-mile buffer analysis allocates development based on the percentage of each TAZ that falls within ¼ mile of the alignment or station area and assumes that development is spread equally throughout the TAZ. Using this approach in the commuter rail analysis allows a comparison of the LRT, BRT, streetcar, and commuter rail corridor results.

[4] Potential station locations were identified only for the purposes of this analysis. Station locations have not been selected as part of the corridor recommendations.

[5] The full TAZ analysis was applied to all the population and employment in any TAZ that fell within ¼ mile of the transit alignment. Because the concentration of population and employment for each TAZ is not known (i.e., whether it is concentrated in a corner of the TAZ or spread equally throughout), this analysis reported the development for the entire TAZ, as it is likely that the development is more concentrated in the portion of the TAZ within or close to the ¼-mile buffer of the proposed alignment.

Table D-1: Summary of Corridor Development Impacts (within ¼ Mile)

Corridor #	Corridor Name	Mode	Additional Development Growth (%)[6]			Net New Development[7] (Total sq. ft. along Corridor)			Net New Development[8] (sq. ft. per Corridor Mile)		
			Resid.	Office	Retail	Resid.	Comm.	Total[9]	Resid.	Comm.	Total[10]
Short-Term (By 2025)											
I	Downtown Norfolk to Norfolk Naval Station	Light Rail	18	15	25	62,000	64,000	126,000	14,000	14,000	28,000
K[11]	Harbor Park to Portsmouth Downtown/Midtown	Street-car	20	20	20	65,000	33,000	99,000	19,000	10,000	29,000
L	The TIDE (under construction)	Light Rail	25	25	25	213,000	320,000	533,000	29,000	43,000	72,000
M	TIDE Extension to Virginia Beach	Rapid Transit[12]	25	25	25	534,000	559,000	1,093,000	44,000	46,000	90,000
Long-Term (By 2035)											
B	Christopher Newport University to Huntington Pt.	Light Rail	20	15	15	205,000	118,000	322,000	22,000	12,000	34,000
C	Downtown Newport News to Christoph. Newport University	Light Rail	20	15	15	64,000	57,000	120,000	8,000	7,000	16,000
D	Phoebus Waterfront to Coliseum Central	Street-car	25	25	25	90,000	89,000	179,000	15,000	15,000	30,000
Extended-Term (After 2035)											
A	Downtown Newport News to Lightfoot[13]	Comm. Rail	18	18	18	33,000	61,000	94,000	1,000	2,000	3,000
H[14]	Harbor Park to Harbour View (via Portsmouth)	Bus Rapid Transit	15	15	15	51,000	83,000	134,000	5,000	8,000	14,000
J	Extension of TIDE from Military Hwy to Naval Station	Light Rail	25	25	25	38,000	36,000	73,000	4,000	4,000	8,000
N	Extension from Greenbrier to Military Hwy Stn.	Light Rail	25	25	25	202,000	195,000	397,000	18,000	17,000	34,000
K[15]	Harbor Park to Portsmouth Downtown/ Midtown	Street-car	25	25	25	18,000	6,000	24,000	5,000	2,000	7,000
O	Harbor Park to Downtown Suffolk	Comm. Rail	21	21	21	30,000	54,000	84,000	2,000	3,000	5,000
P	Harbor Park to Fentress	Comm. Rail	15	15	15	24,000	39,000	63,000	2,000	3,000	5,000

[6] Percent is applied to baseline projection of new development growth, not total baseline development.
[7] Net new development is the share of new regional development, which does not include development shifted within the region.
[8] Net new development is the share of new regional development, which does not include development shifted within the region.
[9] The sum of residential and commercial square feet may not equal the total shown due to rounding.
[10] The sum of residential and commercial square feet may not equal the total shown due to rounding.
[11] Corridor K was initially recommended for short-term implementation, and development impacts were assessed for that timeframe. Subsequently, the HRRTVP final recommendations changed its timeframe to long-term. Also, the impacts shown for Corridor K in the short-term do not include the additional impacts that would be associated with the service operating in a dedicated transit lane through a new tunnel (an extended-term option).
[12] Light rail was used for the market analysis; however, the mode currently being evaluated as part of the Virginia Beach Transit Extension Study.
[13] The segment from Lightfoot to Toano was added to Corridor A late in the study and was not included in the market analysis.
[14] The impacts shown for Corridor H assume that the service would operate in a dedicated transit lane through a new/improved tunnel facility.
[15] The extended-term results are for the additional impacts that would be associated with the service operating in a dedicated lane through a new tunnel.

Table D-2: Summary of Corridor Development Impacts (within Full TAZ)

Corridor #	Corridor Name	Mode	Additional Development Growth (%)[16]			Net New Development[17] (Total sq. ft. along Corridor)			Net New Development[18] (sq. ft. per Corridor Mile)		
			Resid.	Office	Retail	Resid.	Comm.	Total[19]	Resid.	Comm.	Total[20]
Short-Term (By 2025)											
I	Downtown Norfolk to Norfolk Naval Station	Light Rail	18	15	25	45,000	89,000	134,000	10,000	20,000	30,000
K[21]	Harbor Park to Portsmouth Downtown/ Midtown	Street-car	20	20	20	74,000	121,000	195,000	22,000	36,000	58,000
L	The TIDE (under construction)	Light Rail	25	25	25	340,000	444,000	784,000	46,000	60,000	106,000
M	TIDE Extension to Virginia Beach	Rapid Transit[22]	25	25	25	1,361,000	947,000	2,308,000	112,000	78,000	191,000
Long-Term (By 2035)											
B	Chris. Newport University to Huntington Pt.	Light Rail	20	15	15	630,000	275,000	905,000	66,000	29,000	95,000
C	Downtown Newport News to Christopher Newport University	Light Rail	20	15	15	147,000	90,000	237,000	19,000	12,000	31,000
D	Phoebus Waterfront to Coliseum Central	Street-car	25	25	25	236,000	150,000	386,000	39,000	25,000	64,000
Extended-Term (After 2035)											
H[23]	Harbor Park to Harbour View (via Portsmouth)	Bus Rapid Transit	15	15	15	483,000	265,000	748,000	49,000	27,000	76,000
J	Extension of TIDE from Military Hwy to Naval Station	Light Rail	25	25	25	57,000	62,000	119,000	6,000	7,000	13,000
K[24]	Harbor Park to Portsmouth Downtown/ Midtown	Street-car	25	25	25	16,000	28,000	44,000	5,000	8,000	13,000
N	Extension from Greenbrier to Military Hwy Stn.	Light Rail	25	25	25	549,000	428,000	977,000	48,000	37,000	85,000

[16] Percent is applied to baseline projection of new development growth, not total baseline development.
[17] Net new development is the share of new regional development, which does not include development shifted within the region.
[18] Net new development is the share of new regional development, which does not include development shifted within the region.
[19] The sum of residential and commercial square feet may not equal the total shown due to rounding.
[20] The sum of residential and commercial square feet may not equal the total shown due to rounding.
[21] Corridor K was initially recommended for short-term implementation, and development impacts were assessed for that timeframe. Subsequently, the HRRTVP final recommendations changed its timeframe to long-term. Also, the impacts shown for Corridor K in the short-term do not include the additional impacts that would be associated with the service operating in a dedicated transit lane through a new tunnel (an extended-term option).
[22] Light rail was used for the market analysis; however, the mode is currently being evaluated as part of the Virginia Beach Transit Extension Study.
[23] The impacts shown for Corridor H assume that the service would operate in a dedicated transit lane through a new/improved tunnel facility.
[24] The extended-term results are for the additional impacts that would be associated with the service operating in a dedicated lane through a new tunnel.

D.2.2 New Development Generating Construction Impacts

The relationship regarding vacancy rates and development is based on an observed relationship between vacancy rates and office development in metro areas in the U.S. While there is a noticeable fluctuation between vacancy rates and commercial development, most of the development activity occurs near a 10 percent vacancy rate. Moreover, almost all development occurs in the range of 5 to 15 percent vacancy rates, with 10 percent as the midpoint. These data support the use of a 10 percent vacancy rate as the equilibrium rate that acts to invite speculative development.

Based on data collected in the second quarter of 2010, there are 45,000,000 square feet of commercial office space in Hampton Roads, with a vacancy rate of 12.3 percent.[25] This represents a 2.0 percent increase in the vacancy rate from just the third quarter of 2009, indicating that the commercial office market has suffered a slight setback as a result of the recession. However, with the eventual turn in the economy and a modest expansion of existing firms, the Hampton Roads region should be able to reach a 90 percent occupancy rate again, which has been shown to be the "trigger point" for speculative development. The vacancy rate for retail space during the second quarter of 2010 was 7.0 percent,[26] which already meets the "trigger point" for speculative development. Thus, given that the HRRTVP2 transit investments would not be constructed until the future (once the economic recovery likely has gained footing), the proposed LRT, BRT, streetcar, and commuter rail investments would most likely stimulate net gains in commercial development activity rather than simply result in new development that uses the inventory of existing commercial space.

D.2.3 General Impacts

High-quality LRT, BRT, streetcar, and commuter rail services (as with other transportation investments) allow regional growth in Hampton Roads to occur that otherwise would not have been possible. Travel time and travel cost savings make the region more competitive and create a stronger argument for attributing economic growth to transit investments because the creation of an alternative mode choice adds capacity and, through modal shifts, preserves capacity on existing roadway facilities. First and foremost, from a development perspective, LRT, BRT, streetcar, and commuter rail services enhance all trip purposes in the region, whether long or short distance.

In addition, LRT, BRT, streetcar, and commuter rail services complement other travel modes to increase mobility throughout the corridors and, in so doing, increase the corridors' (as well as regional and state) competitive advantage compared to other locations. Implementation of LRT, BRT, streetcar, and commuter rail projects has exact economic impacts. If LRT, BRT, streetcar, and commuter rail investments are not built, the sales between regional industries that are required to support the new development do not occur, and the jobs and incomes would not be generated in Hampton Roads. Absent increases in earnings, none of the fiscal impacts from a broadened and deepened tax base would occur.

An issue often arises when attributing impacts to the LRT, BRT, streetcar, and commuter rail investments: the argument that the development and employment would have happened in Hampton Roads anyway, perhaps in a different location. The problem with this argument is determining where the development would occur. Development seeks advantaged locations; transportation investments provide specific locations with advantages to attract economic growth. As a result, the growth that would not occur in the corridors due to these transportation investments may well not occur in the region or the state either.

[25] Commercial Market Review: Hampton Roads, VA, Harvey Lindsay Commercial Real Estate, 2nd Quarter 2010.
[26] Commercial Market Review: Hampton Roads, VA, Harvey Lindsay Commercial Real Estate, 2nd Quarter 2010.

D.2.4 Hampton Roads Impacts

The following points summarize the economic impacts that the LRT, BRT, streetcar, and commuter rail projects included in the HRRTVP would bring to the Hampton Roads region.

- Provide connections to major employment locations and attractions throughout the corridor;
- Provide access to major sports, entertainment, and meeting facilities;
- Increase the accessibility of the military installations located in the region;
- Use a substantial amount of existing transportation infrastructure, such as underutilized rail corridors (e.g., TIDE Extension to Virginia Beach), while preserving road capacity;
- Decrease the need for parking, which would enable an acceleration in adaptive reuse redevelopment;
- Provide a focal point for demonstrating the value of transit in the Hampton Roads region after the implementation of the initial projects;
- Increase modal choice options in the region, especially when combined with the other modes included in the HRRTVP2, such as express bus and high-speed ferries;
- Provide the context for focused growth through TOD; and
- Create a regional network to connect the individual transit corridors together, supporting the ability of Hampton Roads to compete as a more unified and coordinated metropolitan area.

The HRRTVP corridors with the largest potential development volume impacts and economic impacts within ¼ mile of the proposed alignments or station areas[27] include:

- **Corridor M – TIDE Extension to Virginia Beach (Rapid Transit[28]):** This project would generate approximately 0.56 million square feet of commercial and 0.53 million square feet of residential development, which would translate into 1,716 new direct recurring jobs and 534 new housing units along the corridor.
- **Corridor N – TIDE Extension from Military Highway to Greenbrier and Harbor Park (LRT):** This project would generate approximately 0.19 million square feet of commercial development and 0.20 million square feet of residential development, which would translate into 703 new direct recurring jobs and 202 new housing units along the corridor.
- **Corridor B – Christopher Newport University to Huntington Pointe (LRT):** This project would generate approximately 0.12 million square feet of commercial and 0.20 million square feet of residential development, which would translate into 367 new direct recurring jobs and 205 new housing units along the corridor.
- **Corridor A – Downtown Newport News to Lightfoot[29] (commuter rail):** This project (when extended to Lightfoot in the extended-term) would generate approximately 0.06 million square feet of commercial and 0.03 million square feet of residential development, which would translate into 212 new direct recurring jobs and 33 new housing units within ¼ mile of the corridor stations.

As described above, the analysis also considered the impacts of the corridors on the entire areas of TAZs that had portions within ¼ mile of the proposed alignments.[30] This analysis was not possible for the commuter rail analyses, because those corridor analyses only considered the impacts associated with station areas, not the full

[27] The ¼-mile buffer analysis allocates development based on the percentage of each Transportation Analysis Zone (TAZ) that falls within ¼ mile of the alignment or station area. It assumes that development is spread equally throughout the TAZ. Using the ¼-mile buffer allows a comparison of the LRT, BRT, streetcar, and commuter rail corridor results.

[28] Light Rail was used for the market analysis; however, the mode for this corridor is currently being evaluated as part of the Virginia Beach Transit Extension Study.

[29] The corridor segment from Lightfoot to Toano was added late in the study and was not included in the market analysis.

[30] The full TAZ analysis was applied to all the population and employment in any TAZ that fell within ¼ mile of the transit alignment. Because the concentration of population and employment for each TAZ is not known (i.e., whether it is concentrated in a corner of the TAZ or spread equally throughout), this analysis reported the development for the entire TAZ, as it is likely that the development is more concentrated in the portion of the TAZ within or close to the ¼-mile buffer of the proposed alignment.

lengths of the transit corridors. The HRRTVP corridors with the largest potential development volume impacts and economic impacts for TAZs within a ¼ mile of the proposed alignments include:

- **Corridor M – TIDE Extension to Virginia Beach (Rapid Transit[31]):** This project would generate approximately 0.95 million square feet of commercial and 1.4 million square feet of residential development, which would translate into 2,782 new direct recurring jobs and 1,361 new housing units along the corridor.
- **Corridor N – TIDE Extension from Military Highway to Greenbrier and Harbor Park (LRT):** This project would generate approximately 0.43 million square feet of commercial development and 0.55 million square feet of residential development, which would translate into 1,533 new direct recurring jobs and 549 new housing units along the corridor.
- **Corridor B – Christopher Newport University to Huntington Pointe (LRT):** This project would generate approximately 0.275 million square feet of commercial and 0.63 million square feet of residential development, which would translate into 825 new direct recurring jobs and 630 new housing units along the corridor.

[31] Light Rail was used for the market analysis; however, the mode for this corridor is currently being evaluated as part of the Virginia Beach Transit Extension Study.

Appendix E: Corridor Evaluation

This appendix summarizes the overall corridor evaluation performed for the fixed guideway and commuter rail corridors. The detailed methodology and results are presented in the *Corridor Evaluations and Draft Recommendations* technical memorandum.

E.1 Evaluation Criteria

The evaluation criteria define a method for understanding the overall conditions within the fixed guideway transit (LRT, streetcar and BRT) and commuter rail corridors and their potential local and regional impacts. The criteria are also a way to compare the potential performance of each corridor to each other and to national benchmark standards for successful transit service networks and transit-oriented development (TOD) growth patterns.[32] Table E-1 lists the evaluation criteria used in the overall corridor assessment. These criteria are described in more detail in the sections below.

Table E-1: Evaluation Criteria

Corridor Characteristics	Evaluation Criteria
Land Use Planning to Support TOD	• Comprehensive and small area planning vision for TOD • Zoning to implement TOD • Connection(s) to major employment centers • Population density within ¼ mile (residents/acre projected for 2035) • Ratio of population to employment within ¼ mile (2035)
Market Impact Assessment	• Percentage increase in development growth within ¼ mile of the corridor expected as a result of this transit investment (only includes new development to the region, not shifts within the region) • Net new development to the region resulting from this transit investment (sq. ft. within ¼ mile of the corridor) – total along corridor • Net new development to the region resulting from this transit investment (sq. ft. within ¼ mile of the corridor) – per corridor mile
Capital Cost Estimate Range	• Capital cost estimate per corridor mile for corridor construction
Ridership Projection Range	• Ridership projection range (average weekday ridership) • Ridership projection range per corridor mile • Comparison with existing transit lines of the same mode in other U.S. cities
Contribution to Regional Transit and Multi-modal Network	• Connections to other proposed transit corridors (LRT, BRT, streetcar, ferry, commuter rail, and express bus) and existing major bus transfer facilities • Extent of existing pedestrian and bicycle network (e.g. sidewalks, bike lanes, multi-use paths, narrow low-speed streets), providing safe and convenient connectivity throughout the area, not just within a development site.

[32] The criteria described in this section were applied to the express bus, enhanced bus or ferry corridors. Instead, phasing recommendations for these modes were made based on their ability to support planned fixed guideway routes and promote a regional transit network.

E.1.1 Land Use Planning to Support TOD

This HRRTVP study's focus is integration of transportation and land use planning. Experience throughout the U.S. and the world demonstrates that compact, mixed-use, pedestrian-oriented land use patterns improve transit ridership levels and create "livable communities," a finding increasingly emphasized by FTA. The Commonwealth of Virginia is also implementing policies to promote TOD growth patterns. Given this recognized critical relationship between land use planning and efficient transit service, and the increasing emphasis on TOD in federal and state policy, this study evaluates the corridors from multiple land use dimensions. The following five sub-sections describe these land use evaluation criteria in detail.

Comprehensive and Small Area Planning Vision for TOD

Comprehensive Plans present a community's long-term vision for growth and development. Typically these broad visions are followed by focused efforts to implement them through the use of tools such as zoning revisions, station area planning and urban design guidelines, and corridor master plans. At times, comprehensive plans become out of date, and it is more appropriate to implement a series of small area plans or a future land use map to realize a community's vision.

It is critical that the localities through which these transit corridors extend have clear visions for TOD in order to achieve the densities, mix of uses, and pedestrian-oriented character required to support efficient public transportation systems.

The factors used in this study to evaluate comprehensive and small area planning for each corridor include:

- Overall transit-oriented vision adopted by the jurisdiction
- TOD vision coordinated with adjacent jurisdictions (through joint visioning sessions, elected official collaboration, a memorandum of agreement, etc.)
- Existing comprehensive planning to promote vertical mixed-use development and ground floor retail
- Existing comprehensive planning for pedestrian-oriented urban design pattern (short blocks, interconnected street network, parking in the rear)
- Existing plan for commercial concentration in an urban core

The comprehensive and small area planning vision for each corridor is evaluated in detail in the *Transit and Land Use Compatibility* technical memorandum.

Zoning to Implement TOD

In order for TOD to occur, the zoning and land use controls along the corridor must require, or at least allow, higher density, mixed-use, pedestrian-oriented development patterns.

One of the factors considered for this zoning criterion is the maximum density allowed within the zoning designations along the corridors. There are a number of highly regarded national studies that analyze the housing densities necessary to support a range of transit modes. This study used the density standards outlined in Dittman and Ohland, *The New Transit Town: Best Practices in Transit Oriented Development* (2004) and the DRPT document *Transit Service Design Guidelines* (November 2008). In addition to evaluating corridor zoning according to allowable housing densities, each corridor is evaluated on the following:

- Existing zoning to promote vertical mixed-use development and ground floor retail
- Existing zoning to promote pedestrian-oriented urban design patterns (short blocks, interconnected street network, narrow streets, parking in the rear)

- Existing parking management systems and policies—parking maximums, structured parking requirements, transportation demand management policies

Corridor evaluations respond to both national benchmark standards and comparisons with other corridors under study. As a result, a rating of "high" indicates that the zoning meets national standards for transit corridors as well as the other zoning criteria. A rating of "medium" indicates that transit corridor zoning does not meet national density standards, but is higher than that for the average corridor in this study, and meets some of the other zoning criteria. A "low" rating means that the corridor has few if any of the zoning elements necessary to allow and promote TOD.

The zoning for each corridor is evaluated in detail in the *Transit and Land Use Compatibility* technical memorandum.

Connections to Major Employment Centers

Increasingly, studies of successful U.S. transit services indicate the importance of major employment centers on transit corridors for increasing transit ridership, and for promoting pedestrian-oriented conditions. The HRRTVP evaluated the number of major employment centers that are directly served by each corridor under study. This evaluation is based on the employment center data presented in the Phase 1 Transit Vision Plan final report (April 2009). A major employment center is defined as an area projected to support over 10,000 employees in 2035 according to metropolitan area TAZ data. Airports are also included here due to their significant ridership impact. Corridors serving no more than one major employment center received a "low" rating; corridors serving two major employment centers received a "medium" rating; and corridors serving three or more employment centers received a "high" rating.

Population Density (Residents per Acre)

The existing population density is one way to understand the existing intensity of development along the corridor. Because successful TOD and associated transit are dependent on high levels of station area activity, this measure contributes to an understanding of existing conditions and how they contribute to TOD potential.

For this criterion, population per acre was calculated within ¼ mile of each corridor based on 2034 TAZ data projections. For the commuter rail corridors, population per acre was calculated within ¼ mile of potential station locations. The ratings respond to both national benchmark standards and comparisons with other corridors under study. As a result, a "high" rating under this criterion indicates that the corridor meets or exceeds the minimum population density described above (24-36 residents/acre). A "medium" rating indicates that the corridor meets or exceeds the average population density for all the corridors under study (6 residents/acre); while a "low" rating indicates that the corridor population density is below average for all the corridors under study. It is worth noting that none of the corridors meets the national benchmark standard for this category, so there are no "high" ratings.

Ratio of Population to Employment

It is important that transit corridors support both origin and destination land use types; however, the recent TOD research indicates that there is no ideal ratio for measuring this factor (Dittmar and Ohland, 2004). The intent in calculating the ratio for this study is to ensure that a mixture of residential, non-retail employment, and retail employment uses are located within ¼ mile along each corridor, and to understand the mixed-use character of each corridor in relation to the other corridors under study. For this criterion, the ratio of population to employment density was calculated within ¼ mile of the corridor, using 2034 TAZ data projections. There is no "high" rating for this evaluation category since there is no ideal ratio to use for comparison purposes; the corridors either have or do not have mixed-uses. Because all the corridors under study do have a mix of uses, all of the corridors received a medium rating for this criterion.

E.1.2 Market Impact Assessment

This evaluation considered the market impact assessment in two ways: percent increase in development growth that can be attributed to the transit investment (net new development to the region) and square feet of net new development to the region attributable to the transit investment. These numbers *do not include* shifts in development within the region resulting from the transit investment (development that would happen in another part of the region if the transit corridor were not constructed).

Percentage Increase in Development Growth

This criterion evaluated the percentage increase in development growth within ¼ mile of the corridor expected as a result of the transit investment (for residential, non-retail employment, and retail employment uses). This measure refers specifically to new development to the region, not shifts within the region. The percentage increases in development growth range from 10 percent to 25 percent.[33] Those corridors with a 10-14 percent increment increase received a "low" rating, those with a 15-19 percent increase received a "medium" rating, and those with a 20-25 percent increase received a "high" rating.

Square Footage Increase in New Development to the Region

This criterion evaluates the actual square footage increase in new development to the region expected as a result of the transit corridor's construction. This is calculated within ¼ mile of the corridor. The results for this criterion were evaluated in three ways:

A. Total square feet of new mixed-use development (residential and commercial combined). This result is shown as both a corridor total and as square feet per corridor mile.
B. Residential square feet of new development, shown as both a corridor total and square feet per corridor mile.
C. Commercial square feet of new development (retail and non-retail combined), shown as both a corridor total and square feet per corridor mile.

In reviewing and understanding these market assessment numbers, it is important to note that results represent net new development to the region resulting from the transit investment, specifically within ¼ mile of the corridor. If these results included development shifts within the region, the numbers would be significantly larger. These calculations are useful, however, in understanding the potential transit vision impacts on Hampton Roads as a whole. The low, medium, and high ratings for these criteria are based on comparisons between the corridors.

A detailed market analysis was conducted for each corridor, the results of which are presented in the *Economic Projections for Proposed Transit Corridors* technical memorandum.

E.1.3 Capital Cost Estimation Ranges

The capital cost estimations for this study do not include operation or maintenance costs. The methodology for determining capital costs is based on the study of other recent U.S. transit investments. Estimate ranges include right-of-way acquisition, per-mile construction costs, possible bridge structures, vehicle purchase, and storage and maintenance facilities, among other factors. If the corridor, as proposed, is an extension of an earlier implemented corridor, there are opportunities for shared facilities, which lower the overall capital cost of the extension project.

[33]For this study, please note that the maximum percentage increase for light rail and streetcar development impacts is 25 percent, and the maximum percentage increase for bus rapid transit is 15 percent. A lower maximum percentage for BRT is assumed because the market impact potential is typically lower on a BRT corridor due to the lack of permanence associated with this mode (e.g., there is no track laid; therefore, the routes or service are more easily changed.) In addition, the market analysis for Corridor H (for which BRT is the initial recommendation) shows lower economic development potential than the light rail and streetcar corridors under study because the primary opportunities for development occur at the termini of the corridor.

Evaluations are based on capital cost per corridor mile for mode construction. The estimated average capital cost range per corridor mile for the projects under study is $35-61 million (in 2009 dollars).[34] The evaluation for this study compares these corridors to each other and not to a national benchmark measure, because the estimates themselves are based on nationwide experience.

Rating for Capital Cost Range per Corridor Mile
Overall Average[35]: $35-61 million ($2009)
Low: Over $70 million ($2009)
Medium: $30-70 million ($2009)
High: Under $30 million ($2009)

A capital cost analysis was conducted for each corridor, the results of which are presented in the *Review of Capital Cost Estimation Methodology* technical memorandum.

E.1.4 Ridership Estimation Ranges

For this criterion, ridership estimate ranges for each corridor are evaluated in three ways:

A. Compared with weekday ridership estimates for The TIDE, Hampton Roads' first rapid transit corridor, currently under construction. Both total corridor ridership and ridership per corridor mile were evaluated.
B. Compared with the average of the weekday ridership estimates for all the corridors under study. Both total corridor ridership and ridership per corridor mile were evaluated.
C. Compared with weekday ridership levels for existing light rail and commuter rail systems in the U.S. Both total corridor ridership and ridership per corridor mile were evaluated.

Comparison with weekday ridership estimates for The TIDE

The TIDE's median weekday ridership estimate is 7,130 total, 960 riders per corridor mile.[36] All of the other LRT corridors under study have weekday ridership estimates lower than The TIDE's, ranging from a low of 1,600 to a high of 6,500. On average, weekday ridership for LRT corridors under study is 2,300-4,900 (430-620 riders per corridor mile). The ridership estimates for the streetcar, BRT, and commuter rail corridors are lower than those for the proposed LRT projects.

Given that all the corridors under study have estimated ridership levels lower than The TIDE, no rating was given for this criterion (comparison with estimate for The TIDE). If a rating were given, all the corridors would receive a "low".

Comparison with average ridership estimates for this study

For this study, the overall average weekday ridership range is 2,300 to 3,500 (1,900 to 3,200, excluding The TIDE). The average weekday ridership range per corridor mile is 280-420 (220 to 370, excluding The TIDE). For this criterion, the average estimate to which the other corridors are compared excludes The TIDE. This is because the TIDE estimate is much higher than the others and skews the average. The ratings for this criterion are as follows:

[34] This average does not include Corridor G, the proposed LRT-only tunnel under the Hampton Road Harbor.
[35] This average does not include Corridor G, the proposed LRT-only tunnel under the Hampton Roads Harbor.
[36] The TIDE's ridership estimate was developed in the Norfolk LRT Project Final Design Patronage Forecasting Report (2007 Edition) and is for the year 2030. The ridership estimates conducted as part of this study are for the year 2034.

Rating for Average Weekday Ridership

Overall Average[37]: 1,900-3,200
Low: Under 1,500
Medium: 1,500-3,200
High: Over 3,200

Rating for Weekday Ridership per Corridor Mile

Per Corridor Mile Average[38]: 290-430
Low: Under 290
Medium: 290-370
High: Over 370

Comparisons with ridership levels for existing light rail, streetcar, and commuter rail systems

Another way to understand the ridership estimates for this study is to compare them with ridership numbers for transit lines of the same mode operating in other U.S. cities. Because the ridership model used for this study evaluates each corridor individually, the best comparison examples are single line systems. Both total average weekday ridership and ridership per corridor mile are evaluated.

E.1.5 Contribution to the Regional Transit Network and Multi-Modal Connectivity

The emphasis of the HRRTVP study is the creation of a comprehensive regional transit system. As a result, each corridor's contribution to creating that network and its potential for multi-modal connectivity is critical. For this evaluation, corridors are rated on:

- Connections to other proposed transit corridors (LRT, BRT, streetcar, high-speed ferry, commuter rail, and express/enhanced bus) and existing major bus transfer facilities. Connections to The TIDE are considered as critical since this is the first corridor under construction, and a regional network should build on this initial element.
- How many other rapid transit connections to this corridor are proposed and the importance of this corridor in the creation of the regional network (i.e., importance of making this connection for creating the rest of the network).
- The extent of the existing pedestrian and bicycle network (e.g. sidewalks, bike lanes, multi-use paths), as well as the availability of narrow, low-speed streets to provide safe and convenient connectivity throughout the area, not just within a development site.

E.2 Evaluation Results

Detailed evaluation results for each of the corridors are included in the Corridor Evaluations and Draft Recommendations technical memorandum. Summaries of the results are included below in Section 7 in the descriptions of the recommended corridors.

Note that evaluation criteria were not weighted equally in determining the recommended priority and phasing of corridors. For example, creation of a regional rapid transit network is a high priority for this study, so it is one of the primary factors used for determining implementation terms. Also, this study emphasizes the value and efficiency of coordinated transportation and land use planning decisions. As a result, evidence to suggest that TOD is likely to occur is particularly important for understanding a corridor's implementation readiness. This evidence includes land use planning to support and require compact, mixed-use pedestrian-oriented development; existence of opportunities sites for redevelopment; and an existing safe and comfortable walking and bicycling environment.

[37] This average does not include The TIDE.
[38] This average does not include the TIDE.

Appendix F: Marketing Framework

To support implementation of the Vision Plan, the Phase 2 study prepared a *Marketing Framework Plan*. Key to the success of this plan will be public input and common understanding of the plan. A critical step will be information/marketing and public outreach strategies. The strategies will help ensure that the general public and stakeholders are fully aware of and engaged in the development and implementation of the vision, the process, recommendations, as well as the benefits of transit. This marketing framework is intended to convey the recommendations of the transit vision plan to the community. This section provides a summary of the *Marketing Framework Plan*, which included the following tasks:

- Development of key messages (e.g., talking points) to communicate the purpose of the HRRTVP, recommendations, and benefits of transit for the region;
- Identification of strategic approaches and methods to be used in distributing these key messages (e.g., radio, television, social networking, print, public service announcement (PSA), etc.); and
- Development of a 24-month implementation schedule and budget for the promotional and marketing campaign, aiming to achieve the highest possible exposure at the optimal cost.

The recommended strategies will require that Hampton Roads stakeholders identify and engage a regional agency/organization that can direct and implement the promotional and marketing campaign. The HRRTVP study process did not select an agency that would be tasked with the subsequent promotion of the Vision Plan and coordination of its implementation. A more detailed strategic marketing plan should be developed as a part of the implementation strategy. In addition, each corridor recommendation may require its own tailored marketing strategy to ensure Vision Plan effectiveness and regional transit success. This appendix summarizes the development and distribution of key messages set forth in the *Marketing Framework Plan*.

F.1 Development of Key Messages

Brand Approach

The complexity and scope of presenting the HRRTVP as a new vision for transportation and land use development requires a unifying brand image. An effective brand communication platform will enable target audiences to see that each element of the plan relates to them (a bus route or light rail line). The brand is where interests of the individual or stakeholder group can clearly be merged with the well-being of the region. A brand starts with a brand positioning statement or brand personality. This statement reflects the core HRRTVP message we want our target audiences to perceive about the plan and process – not a mission statement but rather *the message* the audience perceives in its own terms. All communications about the HRRTVP program should carry variations of this message and supporting arguments, including speeches, press releases, websites, communications materials and advertising.

Based on the comments from key communicator participants at the HRRTVP Marketing Framework Development Workshop, the project team developed the following working brand statement:

> *"By participating in the HRRTVP Marketing Framework Development Workshop and offering my opinions, I can improve the Hampton Roads transportation system resulting in a better lifestyle for myself and providing economic and environmental benefits for the Hampton Roads community."*

Branding is critical to creating fundamental engagement. The basic brand positioning statement should be reinforced with a variety of benefit support statements such as the following examples:

- The HRRTVP is an open process where maximum public participation is encouraged;
- The new system is not being designed in a vacuum and will be an integral part of both land use planning and economic development for the region;
- The Vision Plan is designed to develop the most effective, multi-modal transit system possible for the Hampton Roads region;
- The proposed system will enable better, more reliable cross travel planning;
- The improved system will be designed to make travel in the region easier, more reliable and more efficient; and
- The proposed system will provide maximum environmental benefits.

Naming and Logo Development

The current program working title "The Hampton Roads Regional Transit Vision Plan" is quite long and may or may not be the ideal name for the project, especially if the project team is trying to create interest for maximum public participation. In addition to a name choice, a complete branding package should be developed to include brand guidelines and a graphics standards manual. This uniformed brand creates a clear sense of ownership of the Vision Plan as a shared vision for all of Hampton Roads. It makes the HRRTVP come alive and become a living on-going vision and plan.

F.2 Distribution of Key Messages

Public Participation Initiatives

Maximizing public understanding and participation in the HRRTVP will require a multi-tiered approach to reach key target audiences. Ultimately, the program should build overall awareness of the program and establish open channels for on-going dialogue with key segments of the public and other key stakeholders. In today's tight budget environment the project's outreach program should make maximum use of earned media, social media, stakeholder partnerships, a website and available free media.

Earned Media

Earned media is when the press covers a news story at no cost. The press itself is a key audience for the HRRTVP. A basic program should be developed, including routine press releases, briefings of editorial staff, and an electronic press kit.

Website

To help reinforce the fact the HRRTVP is branded a uniquely Hampton Roads project, a dedicated website should be created. This would carry the branding of the project and identification of the sponsoring agencies. It could also include useful links to individual localities and stakeholder websites with important and time-sensitive information.

Project Brochure

A project brochure has been produced for use at events (e.g. public meetings), mail requests and available in PDF format on the website. Eventually, the brochure should carry the overall brand identity of the program. The brochure emphasizes that the HRRTVP is a living vision and not a fait accompli.

PowerPoint Presentation

A baseline PowerPoint presentation should be prepared featuring the core material and branding of the brochure plus detailed project maps, illustrations of mode options and additional charts. An important aspect of the presentation is to instruct attendees on public input options. The baseline PowerPoint presentation could be adapted for specific audiences.

Social Media/Networking

Getting the word out about the HRRTVP can be amplified by utilizing the exploding world of social media/networking at very low cost. By establishing and updating content on Facebook or YouTube, the project can establish a network of interested parties that takes on a life of its own. This effort would meet the communication needs of colleges and universities and help in partnering on various "green" or sustainability awareness campaigns.

Leverage Partnerships

A number of stakeholders in the Hampton Roads area would make natural partners for the HRRTVP program. One way to establish partnerships is to engage key stakeholders to participate in the communications planning for the project. For example, the key communicators group could reconvene as an ad hoc committee to further develop messages and outreach. With vested interest in project success, it is likely that committee members would provide links to the project website from their own organizations' websites, distribute information to their constituents, and endorse the elements of the project. The best time to reconvene the group would be during the project naming phase and brand message development. In addition, leveraging the recently developed public outreach email distribution lists from the Norfolk LRT Project, WATA Transit Development Plan, and HRT Participation Plan meetings would secure a firm foundation for increasing awareness of the Vision Plan.

Ambassador Program

The HRRTVP Ambassador Program could be established to maximize outreach to select stakeholders. Members of the following groups, who have already demonstrated their interest in transit services, could be recruited to increase awareness of the Vision Plan and secure stakeholder support:

- HRT Transit Riders Advisory Committee
- HRTPO Citizens Transportation Advisory Committee
- WATA Transit Development Plan – Stakeholders Group
- Transportation District Commission of Hampton Roads – Transit Rider Advisory Committee (TRAC)

The HRRTVP Ambassadors would be instrumental in providing the Vision Plan recommendations to key civic leagues, neighborhood groups, tenant corporations, elderly and disabled communities, etc.

Paid Advertising

Subject to budget resources, paid advertising could be utilized to promote the public meetings. Though it is not anticipated that extensive paid advertising will be utilized, there are times when it is advantageous. Paid advertising could include announcements for public meetings or other major events. Certain populations do not use the Internet for information access while they do read the newspaper. As the plan is implemented, partners could be utilized (especially media partners) to extend the message through the use of co-operative advertising.

Free Advertising

Exterior transit advertising is another method to increase overall HRRTVP awareness and direct people to the website. The medium typically reaches 90% of a region's population. Interior advertising is generally available and can be used to target an important audience, the existing transit customer. The only cost associated with this media is printing and posting fees.

In addition, engaging members of the military is of great importance to the success of this Vision Plan. Military channels of communication, such as intranets, installation ambassador messaging, "Welcome to Hampton Roads" orientations, and the Morale, Welfare and Recreation team's events and Facebook page, should be used as appropriate to increase the military's awareness of the Vision Plan.